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Report 11665
08 March 2000

AEROJET

Integrated Advanced Microwave Sounding Unit-A (AMSU-A)

Engineering Test Report

Radiated Emissions and SARR, SARP, DCS Receivers, Link Frequencies EMI Sensitive Band Test Results, AMSU-A1, S/N 109

[redacted]

Contract No. NAS 5-32314
CDRL 207

Submitted to:

National Aeronautics and Space Administration
Goddard Space Flight Center
Greenbelt, Maryland 20771

Submitted by:

Aerojet
1100 West Hollyvale Street
Azusa, California 91702

Aerojet

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TABLES

FIGURES

1. INTRODUCTION

1.1 General

This document contains the procedures and test results of the radiated emissions tests performed on the AMSU-A1 instrument, part number 1331720-2, serial number 109. The test was performed as described in paragraph 3.4.6 of AE-26151/5E Test Procedure, Electromagnetic Interference (EMI)/Electromagnetic Radiation (EMR) and Electromagnetic Compatibility (EMC) for Advanced Microwave Sounding Unit-A (AMSU-A), dated 11 February 1999.

1.2 Purpose

The purpose of this report is to describe the tests performed and to present the backup data collected to verify that the AMSU-A1 instrument meets the specified requirements. The tests performed encompass the discrete frequencies of the DCS, SARR, and SARP sensitive bands described in paragraph 3.6.1.4.1 of the Interface Specification, IS-3267415. In addition, the METOP requirements for the Advanced Microwave Sounding Unit-A1, Instrument Interface Control Document, MO-IC-MMT-A1-0001, paragraph 4.3.1.3.3, were incorporated. The requirement consisted of the radiated emissions per test method RE02, 14 kHz to 18 GHz, and the discrete frequencies of Table 4.3.1.3-2 in the ICD. This requirement is presented in Figure 1 of this document.

1.3 Scope

This document describes the test performed by Aerojet, and it is presented in the following manner:

Section 1	Contains general introductory material and a summary of the test results.
Section 2	Contains a detailed description of the test plan, test procedure, and test results.
Section 3	Contains supplementary test information, pertinent test data, and the list of test equipment used.

1.4 Summary of Test Results

The AMSU-A1 instrument, serial number 109, meets the radiated emissions requirements of the Interface Specification, IS-327415, and the Interface Control Document, MO-IC-MMT-A1-0001, paragraph 4.3.1.3, without exception.

2. TEST PROGRAM

2.1 Test Article

The AMSU-A system passively monitors radiation from the earth's surface and atmosphere in the microwave portion of the spectrum. The instruments incorporate fifteen total-power super heterodyne type radiometers. The system is composed of two independent instruments. The module designated as AMSU-A2 contains the two lowest-frequency channels, i.e., Channel 1 has the 23.8 GHz frequency and Channel 2 has the 31.4 GHz frequency. The module designated as AMSU-A1 contains the thirteen remaining channels with frequencies from 50.3 GHz to 89 GHz.

Periodic on-board calibration is accomplished by using an in-flight blackbody calibration and cold space as energy reference sources. During each scan, the shrouded reflector observes 30 earth scene cells with one sample period each and two calibration target cells with two sample periods each. Complete end-to-end in-flight calibration from the antenna to the AMSU-A instrument output is provided for each channel. This will yield the maximum in-flight calibration accuracy that gives the radiometric data the required sensitivity and precision.

At each frequency, the half power antenna beamwidth is a constant 3.33°. Thirty contiguous scene resolution cells spaced 3.33° along the scan line are sampled in a stepped-scan fashion every eight seconds. The scan covers 50° on each side of the satellite path.

2.2 Test Starting and Completion Dates

The AMSU-A1 instrument, serial number 109, was tested between December 17 and 22, 1999.

2.3 Instrumentation

All instrumentation were suitable for the purpose intended. Each instrument used was within its certification period. Instrumentation accuracy was verified by calibration in accordance with MIL-STD-45662 as implemented and controlled by Aerojet standard operating procedures. The attached Test Data Sheet 2, in Section 3, contains the list of the equipment with pertinent traceability information.

2.4 Test Frequencies

The test frequencies were selected from paragraph 3.6.1.4.1 of the interface specification, IS-3267415, and are listed in Tables I and II. The RE02 METOP requirements are presented in Figure 1 and the table within the figure.

Table I SARR, SARP, DCS Receiver Channel Guard Limits

Frequency (MHz)	Radiation Limit (dBm)	E-Field Limit * (dB μV/m)	Notes
118.00 – 120.00	-100	18.9	121.5 MHz
120.00 – 121.450	-125	-6	121.5 MHz
121.450 – 121.485	-145	-26	121.5 MHz
121.485 – 121.515	-150	-31	121.5 MHz
121.515 – 121.550	-145	-26	121.5 MHz
121.550 – 123.000	-125	-5.9	121.5 MHz
123.00 0 – 125.000	-100	19.2	121.5 MHz
236.000 – 240.000	-100	24.9	243.0 MHz
240.000 – 242.925	-125	0	243.0 MHz
242.925 – 242.975	-145	-20	243.0 MHz
242.975 – 243.025	-150	-25	243.0 MHz
243.025 – 243.075	-145	-20	243.0 MHz
243.075 – 246.000	-125	0.1	243.0 MHz
246.000 – 250.000	-100	25.3	243.0 MHz
385.100 – 401.100	-100	29.4	406.05 MHz
401.100 – 405.900	-125	4.5	406.05 MHz
405.900 – 406.000	-145	-15.5	406.05 MHz
406.000 – 406.100	-150	-20.5	406.05 MHz
406.100 – 406.200	-145	-15.5	406.05 MHz
406.200 – 411.000	-125	4.6	406.05 MHz
411.000 – 425.000	-100	29.9	406.05 MHz
396.000 – 401.500	-125	4.4	401.65 MHz
401.500 – 401.600	-145	-15.6	401.65 MHz
401.600 – 401.700	-150	-20.6	401.65 MHz
401.700 – 401.800	-145	-15.6	401.65 MHz
401.800 – 406.000	-125	4.5	401.65 MHz

* E-field limits have been calculated by METOP and are for reference only. The following formula has been applied for translating Power levels to Field strength levels.

$$E[dB\mu V/m] = P[dBm] - Gr[dBi] + 20\,log(f[Hz]) - 42.7$$

where P is the received power, Gr is the gain of the receiving antenna and f is the frequency. Note that Gr has arbitrarily been set to 0 dB (isotropic) in calculating the above levels. E-field limits would have to be adjusted to reflect actual antenna characteristics.

Table II METSAT Special Frequencies

Frequency	Receiver/Ampl Sensitivity
59.458 MHz ±0.5 kHz	–60 dBm
60.10 MHz ±0.5 kHz	–60 dBm
141.360 MHz ±0.5 kHz	–60 dBm
142.9 MHz ±0.5 kHz	–60 dBm
282.733 MHz ±0.5 kHz	–60 dBm
285.813 MHz ±0.5 kHz	–60 dBm
371.921 MHz ±0.5 kHz	–60 dBm
375.972 MHz ±0.5 kHz	–60 dBm
624.925 MHz ±0.5 kHz	–60 dBm
631.730 MHz ±0.5 kHz	–60 dBm
743.841 MHz ±0.5 kHz	–60 dBm
751.944 MHz ±0.5 kHz	–60 dBm
121.5 MHz ±15 kHz *	–150 dBm (Bandwidth 100 Hz)
243 MHz ±25 kHz *	–150 dBm (Bandwidth 100 Hz)
401.650 MHz ±50 kHz *	–150 dBm (Bandwidth 100 Hz)
406.05 MHz ±50 kHz *	–150 dBm (Bandwidth 100 Hz)
2010-2040 MHz	–120 dBm

* METOP replaces these frequencies with the frequencies in Table I.

2.5 Operational Mode

The AMSU-A1 instrument was tested in the IN-ORBIT (full scan) mode of operation. In this mode, the antenna is rotating continuously and all the circuits are working. The maximum electric field radiated emissions are produced in this mode of operation.

2.6 Test Location

This test was conducted in the shielded enclosure located in Building 183 of the Aerojet test facility.

2.7 Test Procedure

This test procedure insures that the AMSU-A1 instrument can demonstrate compliance in meeting the radiated emissions limits presented in Figure 1, and Tables I and II. The test procedure that was followed during conduction of the test conforms with the Process Specification, Test Procedure, Electromagnetic Interference (EMI)/Electromagnetic Radiation (EMR) and Electromagnetic Compatibility (EMC) for Advanced Microwave Sounding Unit-A (AMSU-A), document number AE-26151/5E paragraph 3.4.6.
The steps that were followed during the conduct of the test are the following:

Step 1. Connect the antenna to the proper receiver/amplifier port. Verify that the AMSU-A is operating in the IN ORBIT mode.

Step 2. Allow the EMC test equipment to warm up for a minimum of 10 minutes.

Step 3. Program the spectrum analyzer system (HP 8566B) to automatically scan and plot all narrowband data from 14 kHz to 1 GHz, switching the appropriate antenna/amplifier throughout the frequency range.

Step 4. All data shall be below the limits shown in Figure 8 (AE-26151/5E). If any emissions are observed to exceed the limit line, command the computer to print the measured levels.

Step 5. If any narrowband signals exceed the limits, perform an ambient test and determine the source of the emanations. Reduce or eliminate the source, if external to the AMSU-A instrument, and repeat the test.

Step 6. Set up horn antenna (RGA-180) one meter from the point of maximum radiation.

Step 7. Self-calibrate the signal analyzer.

Step 8. Sweep throughout the frequency range of 1 to 18 GHz, in a minimum of two ranges, recording the observed narrowband emission levels.

Step 9. All data shall be below the limits shown on Figure 8 (AE-26151/5E); if not, perform step 5.

Step 10. Affix all plots, photos, calculations, and related information to TDS 2.

Step 11. After disconnecting the horn antenna, set the signal analyzer to one of the four frequencies listed in 3.4.6 (AE-26151/5E) with the appropriate frequency span.

Step 12. Activate the series preamplifier (HP 71210 of the spectrum analyzer (HP 71200)) and reduce the test equipment bandwidth to 10 kHz or less until the appropriate sensitivity is attained.

Step 13. Program the signal analyzer for noise averaging to a minimum of eight times. Verify that the sensitivity noise level is below the required level.

Step 14. Connect the antenna to the signal analyzer amplifier input.

Step 15. The measurement should be within the ambient level, and no narrowband frequencies should be detected at the specified frequency above the sensitivity level specified in 3.4.6 (AE-26151/5E). Plot the screen presentation.

Step 16. Repeat steps 11 through 15 while performing a measurement on the remaining frequencies.

Step 17. Record the information regarding the test on TDS 2 and attach all plots, photos, calculations, and other related information.

Step 18. Repeat steps 11 through 15 while performing measurements on the frequencies depicted on Table III (AE-26151/5E).

Step 19. Repeat step 17.

NOTE: Reference to "frequencies listed in 3.4.6 (AE-26151/5E)" means Table II of this document.
Reference to "Figure 8 (AE-26151/5E)" is the same as Figure 1 of this document.
Reference to "Table III" is the same as Table I of this document.

2.8 Test Results

No radiated emissions were recorded above the specified sensitivity levels. The emissions detected were ambient emissions produced by the Halon System. Some emissions were introduced into the shielded enclosure via the interconnect cables. In this case, the cables were moved to an area of minimum emissions, i.e., until the detected emissions were below the specified level.

The recorded data is presented in this order:

Plots 1 through 14	Cover the frequency range from 118.00 MHz to 125.00 MHz. The odd numbered plots represent the antenna in the horizontal position. The even numbered plots represent the antenna in the vertical position. The emission that approximated the limit was a signal at 121.499 MHz, 0.12 dBm below limit with the antenna in the vertical position. See plot 8.
Plots 15 through 21	Cover the frequency range from 236.00 MHz to 250 MHz. The test was conducted with a circularly polarized antenna, for this and all subsequent measurements above 200 MHz. The emission that approximated the limit, in this frequency range, was a signal at 243.023 MHz, 0.60 dB below the limit. See plot 18.
Plots 22 through 28	Cover the frequency range from 385.10 MHz to 425.00 MHz. The emission that neared the limit was detected at 409.992 MHz, 0.16 dB below the limit. See plot 27.
Plots 29 through 33	Cover the frequency range from 396.00 MHz to 406.00 MHz. The detected emission that approximated the limit was a signal at 401.626 MHz, 0.11 dB below the limit. See plot 33.
Plots 34 and 35	Represent the telemetry frequency of 2.010 to 2.040 GHz. All detected emissions in this frequency are a minimum of 4 dB below the limit. This test was performed in the horizontal and vertical polarization of the double-ridged guide antenna. See plot 34.
Plots 36 through 51	Contain the twelve special frequencies from 59.458 MHz to 751.944 MHz listed in Table II. The frequencies between 59.458 to 142.9 MHz were tested with the antenna in two polarities. All recorded emissions were detected over 33 dB below the limit.
Plots 52 through 57	These plots present the test method RE02, electric field emissions, throughout the frequency range of 14 kHz to 18 GHz. The frequency ranges of 30 MHz to 200 MHz and 1 to 18 GHz were performed with the antenna in two polarities. The emission that nears the specification, i.e., 11 dB below the limit was detected at 18 MHz. See plot 52.
Plots 58 through 68	Cover the METOP special frequencies listed in Figure 1. The frequency range between 400 and 500 MHz was measured with a circularly polarized antenna. The levels were 15 dB below the limit. The other five frequencies between 1217 and 5852 MHz were tested with the double-ridged guide antenna in two polarities. The recorded emission that approximates the limit was recorded at 2.052 GHz where the level is 7.04 dB below the limit. See plot 63.

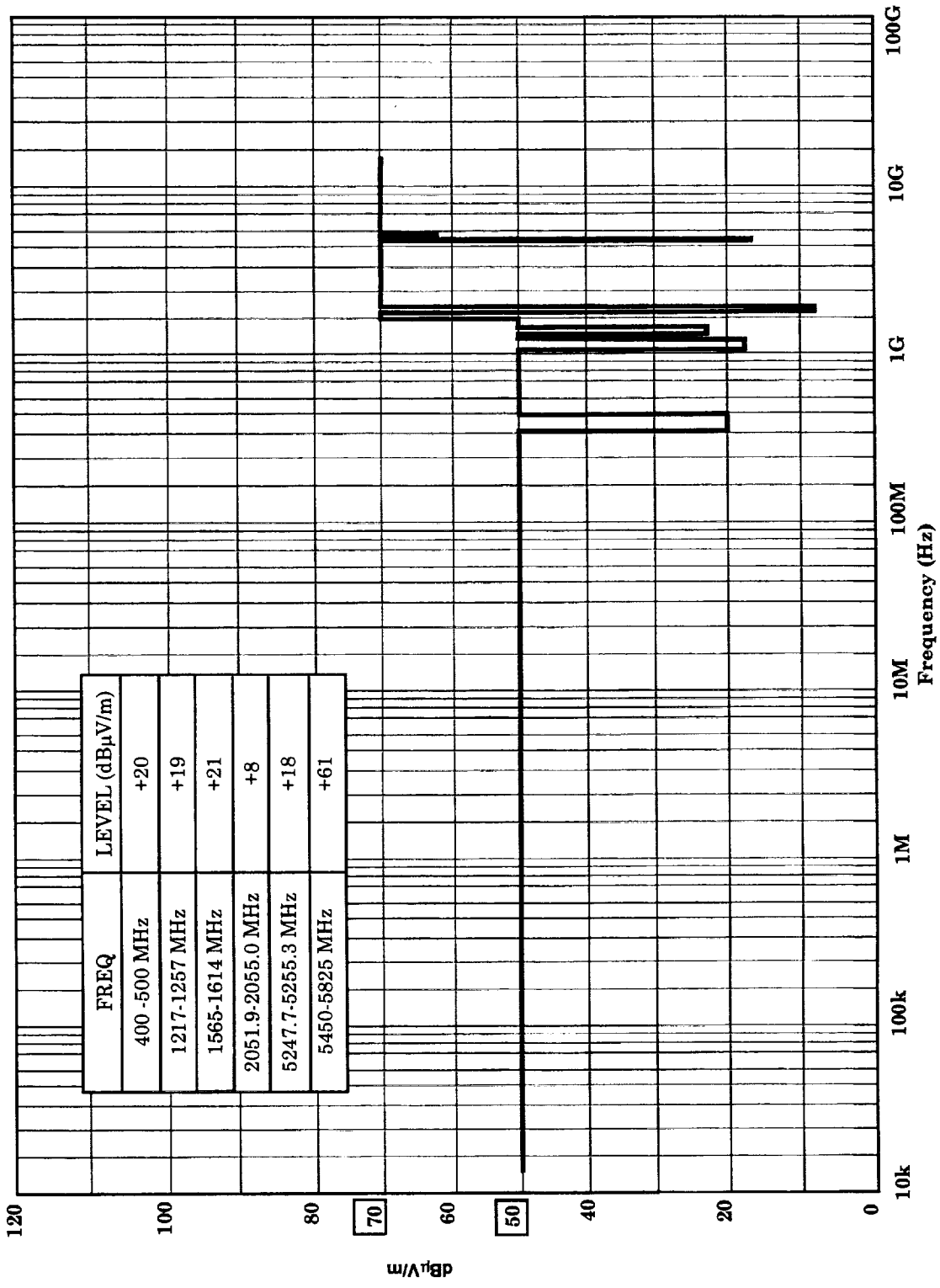


Figure 1 Radiated Narrowband Limits for Electric Field Emissions METOP Only

3. SUPPLEMENTARY INFORMATION

3.1. Supplementary Information

This section contains the Test Data Sheet, Plots, and the equipment list.

TEST DATA SHEET 2 (Sheet 1 of 3)
3.4.6: RE02 Test

Test Setup Verified: M.R Yarbrough 12-17-99
Signature

3.4.6.3.1 Step 1: Test Equipment Log

Item	Manufacturer	Model/ Part No.	Aerojet Inventory No.	Calibration Date	Calibration Due Date
Spectrum Analyzer	HP	70004A	55447	10-19-99	5-19-00
Plotter	HP	7470A	57760	CNR	CNR
Spectrum Analyzer	HP	8566B	54861	11-20-99	6-20-00
Active Rod Antenna	EMCO	3301B	55635	1-7-99	1-7-00
Biconical Antenna	EMCO	93110	C200224	2-24-99	2-24-00
Biconical Antenna	EMCO	3110	55361	11-11-99	11-11-00
Double Ridged Guide Antenna	Electro Metrics	RG180	L508357	11-11-99	11-11-00
Log Conical Antenna	Electro Metrics	LC425	L508358	2-25-99	2-25-00
Computer	HP	9836	46134-15	CNR	CNR
Plotter	HP	7475A	47417	CNR	CNR
Printer	HP	2671G	07202	CNR	CNR
Amplifier	HP	8447F Op H64	C200230	9-15-99	1-15-01
Amplifier, Microwave	HP	8449B	C200203	8-9-99	8-9-00

TEST DATA SHEET 2 (Sheet 2 of 3)
3.4.6: RE02 Test (Cont)

Test Setup Verified: M. R. Yarbrough 12-17-99
Signature

3.4.6.3.2: Emission Measurements

Step	Antenna/Frequency	Band	Required	Emissions within limits?		Comments/ Observations
				Yes	No	Plots #
4	All except Horn 14 kHz to 1 GHz	Narrow	See Figure 6	✓		52 & 53
~~6~~	~~All except Horn 14 kHz to 1 GHz~~	~~Broad~~	~~See Figure 7~~ MR 22 Dec 99			
12	Horn, RGA-180 1 to 2 GHz MR 12/20/99	Narrow	See Figure 6	✓		54 & 55
15	Biconical, EMCO 3104 121.5 MHz with Ampl	Narrow	No narrow-band freq. > -150 dBm	✓		7 & 8
16	Log Conical, EMCO 3101 243 MHz, 401.65 MHz, & 406.05 MHz with Ampl	Narrow	No narrow-band freq. > -150 dBm	✓		18, 25, & 31
19	Horn, RGA-180 2010 to 2040 MHz with Ampl	Narrow	No narrow-band freq. > -120 dBm	✓		34 & 35
21	Biconical/Log Conical 59.458 to 751.944 MHz	Narrow	No narrow-band freq. > -60 dBm	✓		36 Through 51
21	400 to 500 MHz	Narrow	-107.1dBm	✓		58
21 MR 12/22/99	10 to 18 GHz	Narrow	Figure 3	✓		56 & 57
21	1217 to 1227 MHz MR 12/22/99	Narrow	-111.8 dBm	✓		59 & 60
21	1565 to 1614 MHz	Narrow	-111.2 dBm	✓		61 & 62
21	2051.9 to 2055 MHz	Narrow	-126.7 dBm	✓		63 & 64
21	5254.7 to 5255.3 MHz	Narrow	-122.8 dBm	✓		65 & 66
21	5450 to 5825 MHz	Narrow	-80.7 dBm	✓		67 & 68

NOTE: Attach all backup data generated during the test (photos, printouts, plots, test logs, additional commer or observations, etc.) to this data sheet.

TEST DATA SHEET 2 (Sheet 3 of 3)
3.4.6: RE02 Test (Cont)

Test Setup Verified: M. R. Yarbrough
Signature

3.4.6.3.2: Emission Measurements

Step	Antenna*/Frequency Range (MHz)	Band	Radiation Limit (dBm)	Emissions within limits?		Comments/ Observations Plot #
				Yes	No	
22	118.000 - 120.000	Narrow	-100 / Table IV	✓		1&2
22	120.000 -121.450	Narrow	-125 / Table IV	✓		3&4
22	121.450 - 121.485	Narrow	-145 / Table IV	✓		5&6
22	121.515 - 121.550	Narrow	-145 / Table IV	✓		9&10
22	121.550 - 123.000	Narrow	-125 / Table IV	✓		11&12
22	123.000 - 125.000	Narrow	-100 / Table IV	✓		13&14
23	236.000 - 240.000	Narrow	-100 / Table IV	✓		15
23	240.000 - 242.925	Narrow	-125 / Table IV	✓		16
23	242.925 - 242.975	Narrow	-145 / Table IV	✓		17
23	243.025 - 243.075	Narrow	-145 / Table IV	✓		19
23	243.075 - 246.000	Narrow	-125 / Table IV	✓		20
23	246.000 - 250.000	Narrow	-100 / Table IV	✓		21
23	385.100 - 401.100	Narrow	-100 / Table IV	✓		22
23	401.100 - 405.900	Narrow	-125 / Table IV	✓		23
23	405.900 - 406.000	Narrow	-145 / Table IV	✓		24
23	406.1 00 - 406.200	Narrow	-145 / Table IV	✓		26
23	406.200 - 411.00	Narrow	-125 / Table IV	✓		27
23	411.000 - 425.000	Narrow	-100 / Table IV	✓		28
23	396.000 - 401.500	Narrow	-125 / Table IV	✓		29
23	401.500 - 401.600	Narrow	-145 / Table IV	✓		30
23	401.700 - 401.800	Narrow	-145 / Table IV	✓		32
23	401.800 - 406.000	Narrow	-125 / Table IV	✓		33

* All frequency ranges are to be performed with antenna in both vertical and horizontal polarization.

Signature/Date

Unit AMSU-A1 1331720-3

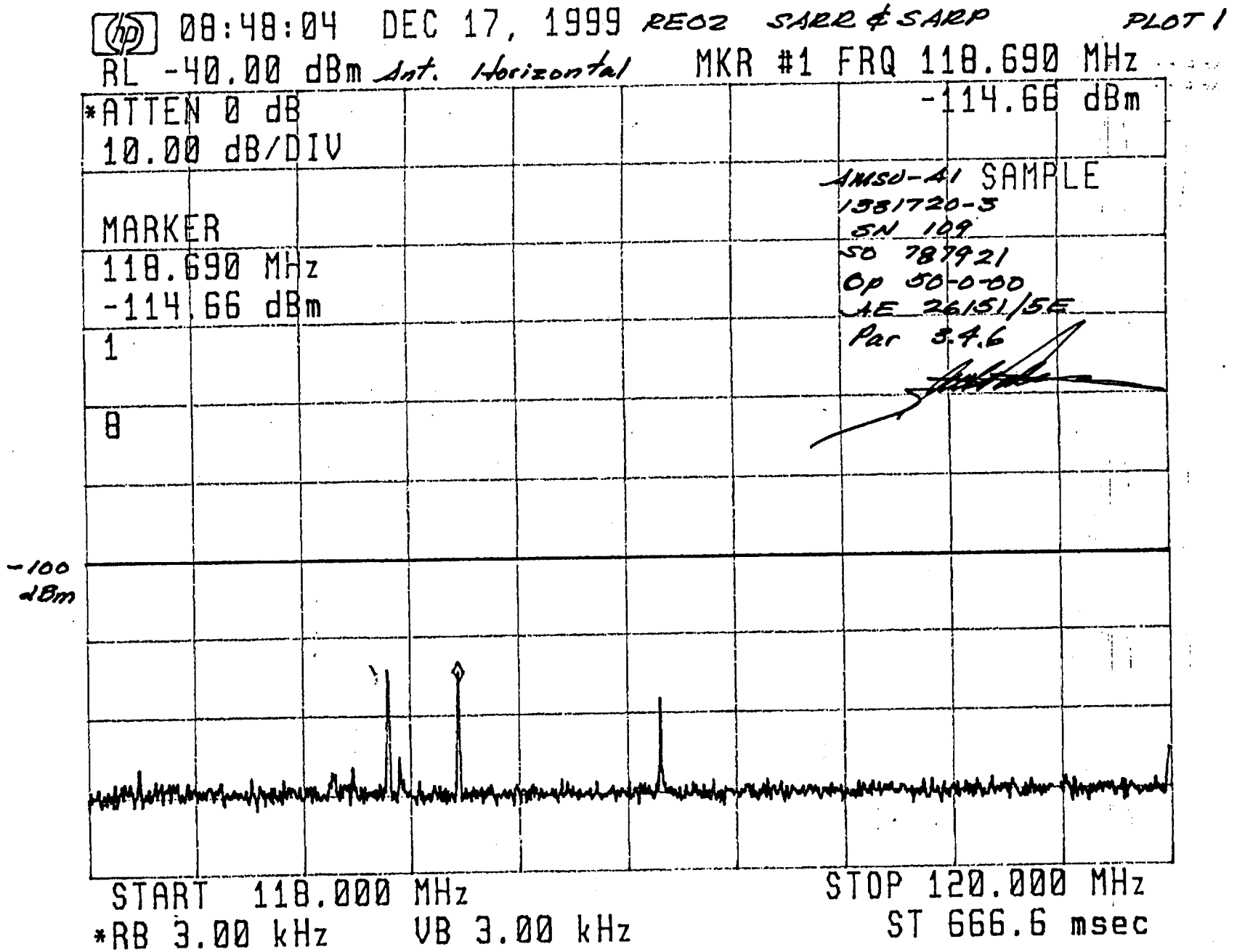
Serial No. 109

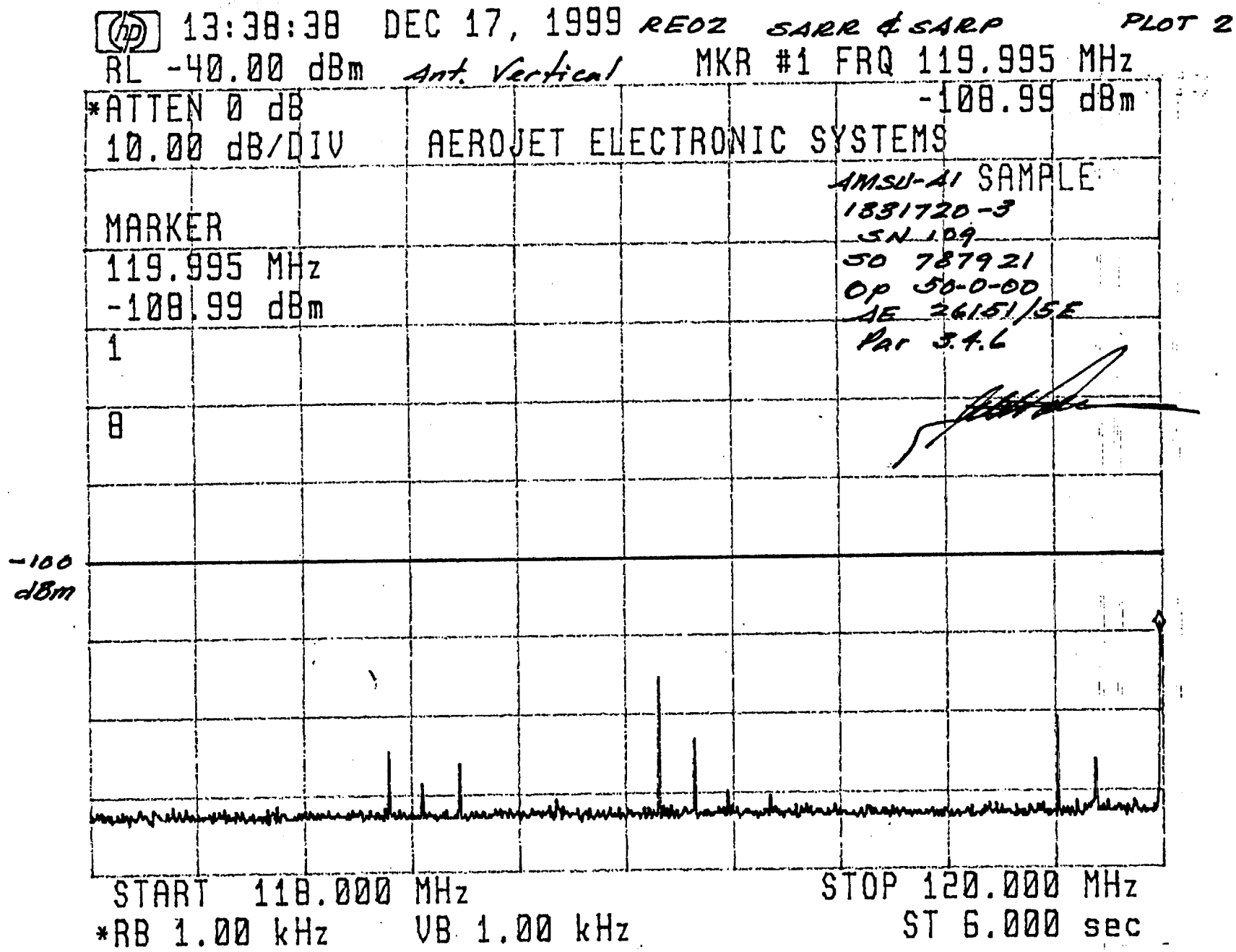
Shop Order 787921 Oper 50-0-00

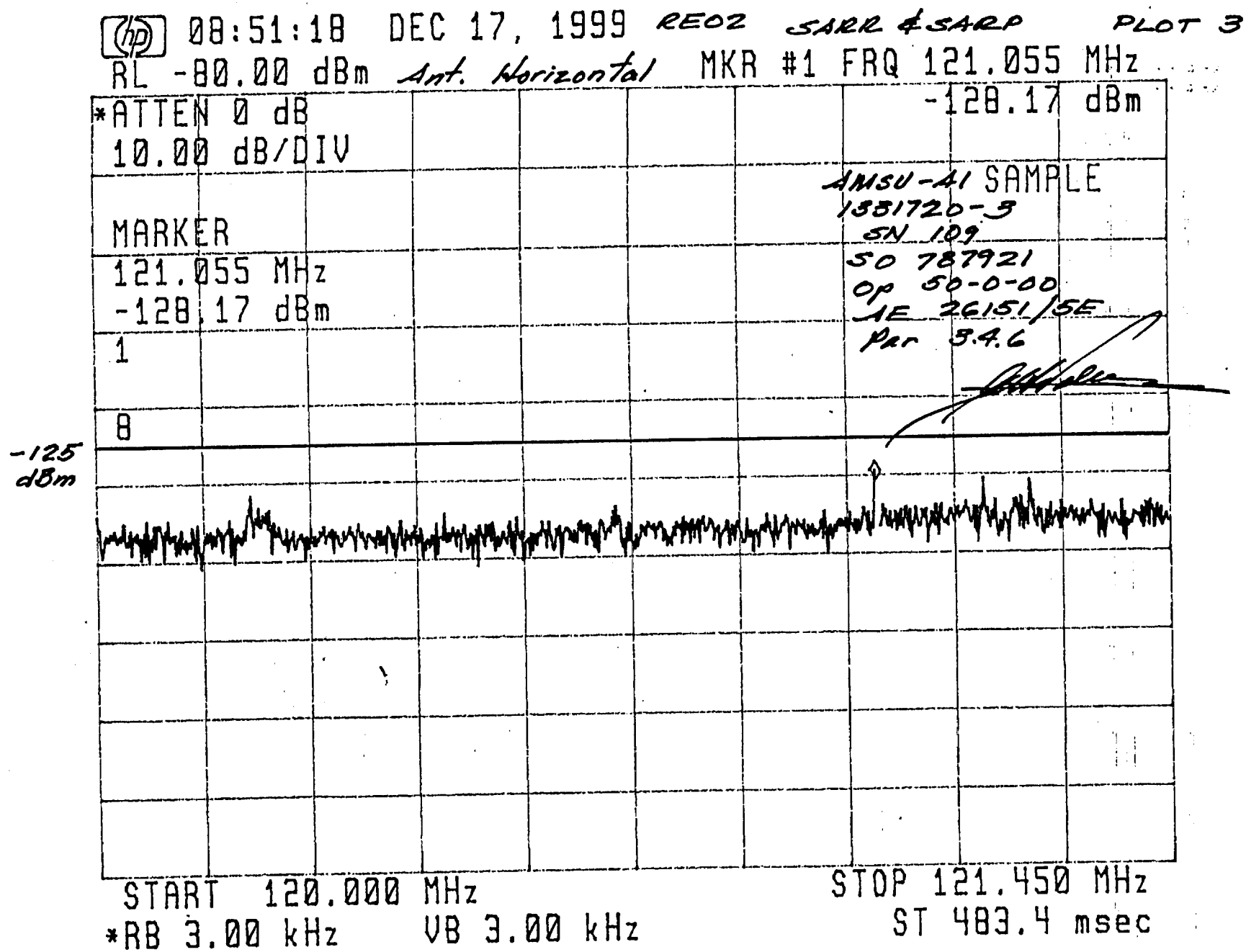
Engineer: 22 Dec 99

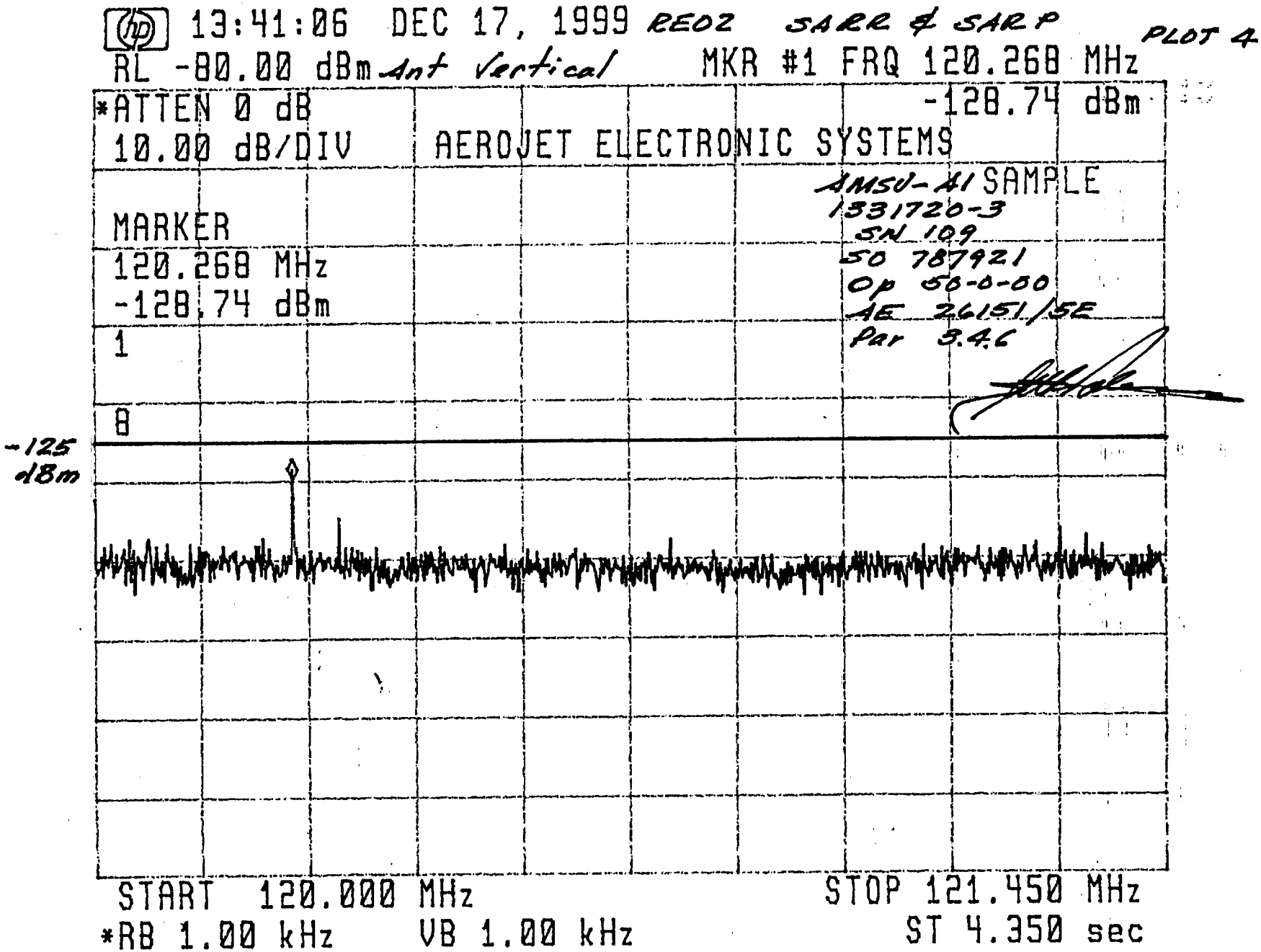
Quality Control: 7A 269 06 JAN 00

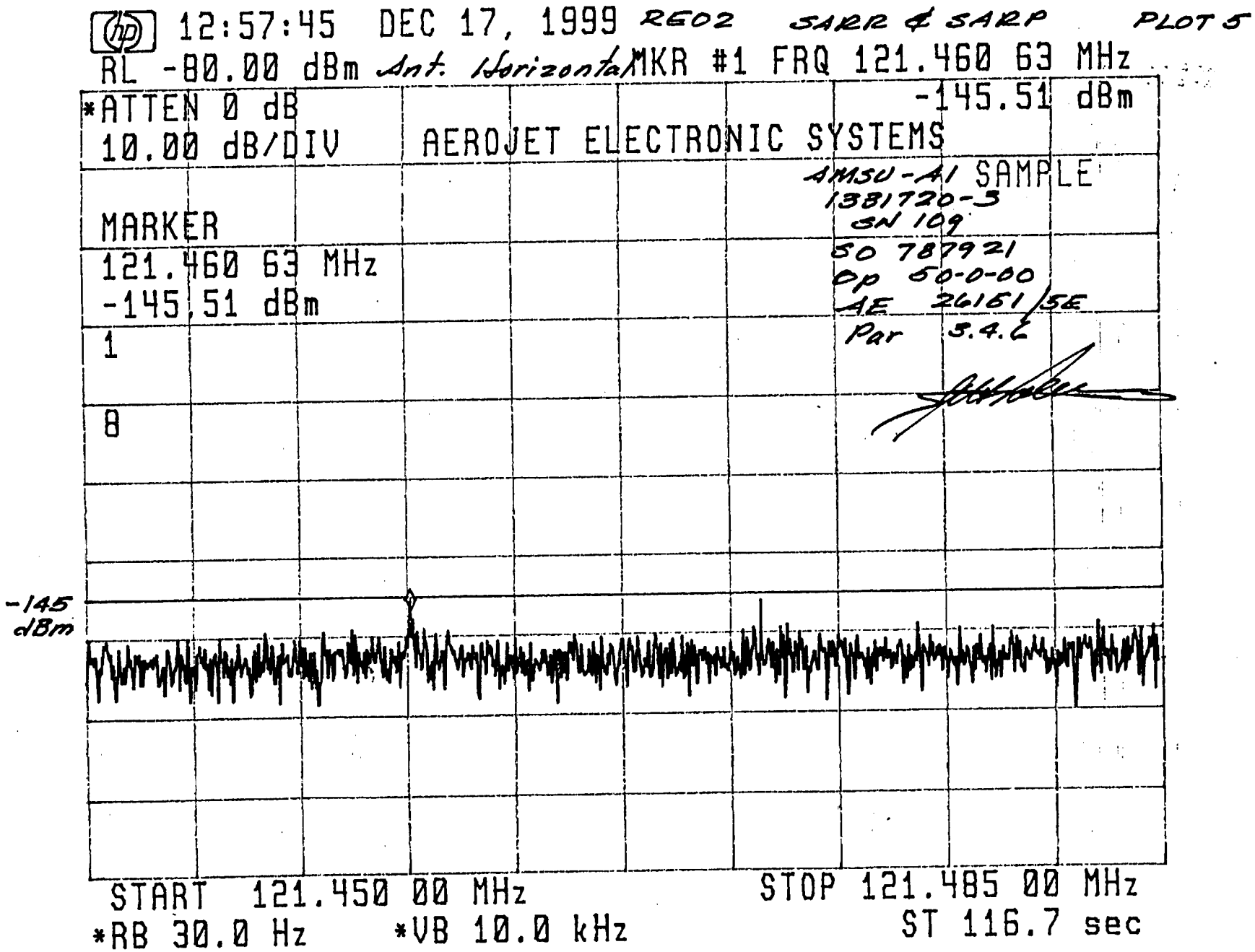
Customer Representative: 1-7-00

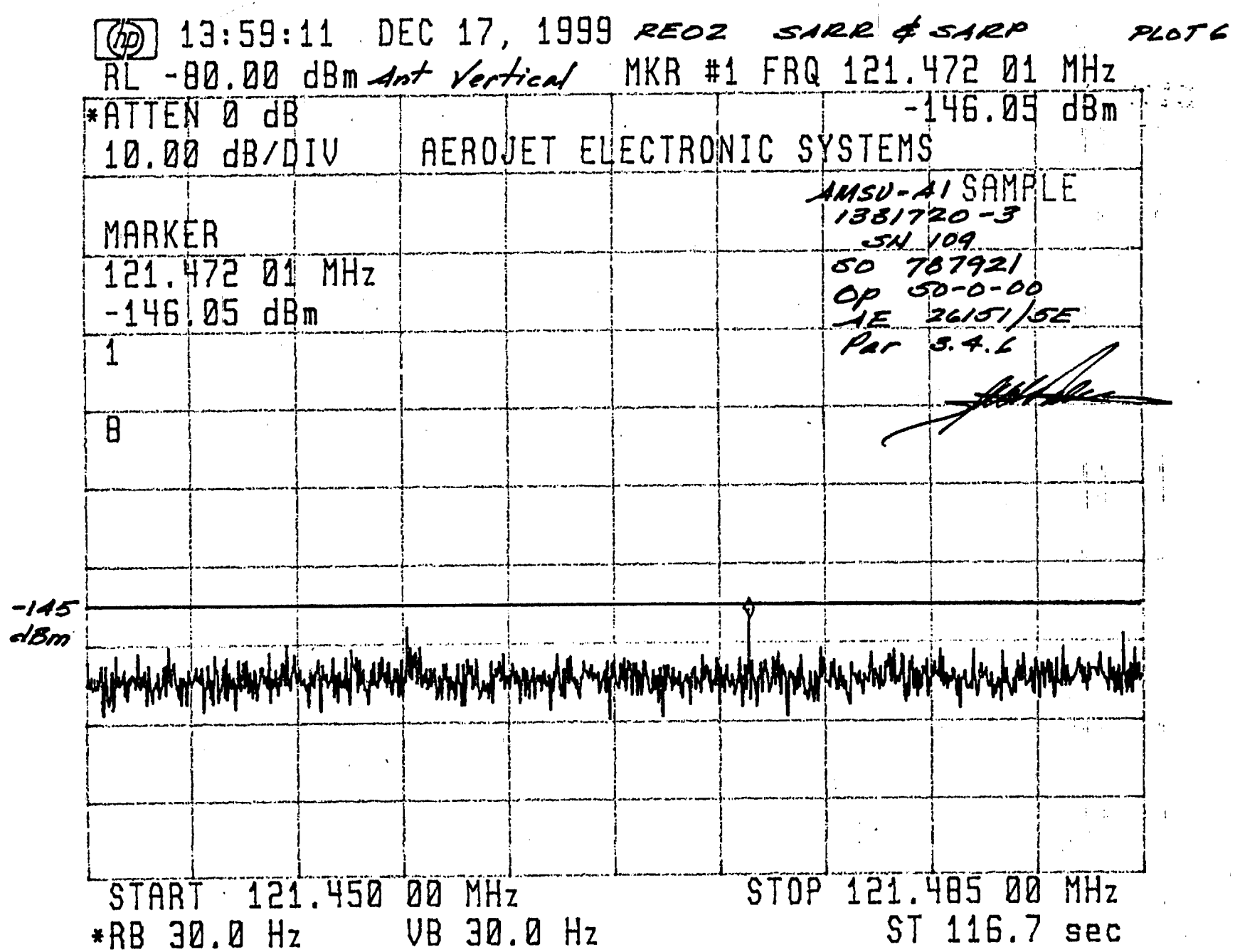

08:48:04 DEC 17, 1999 REO2 SARR & SARP PLOT 1
RL -40.00 dBm Ant. Horizontal
MKR #1 FRQ 118.690 MHz
*ATTEN 0 dB
10.00 dB/DIV
-114.66 dBm
AMSO-A1 SAMPLE
1381720-3
SN 109
SO 787921
Op 50-0-00
AE 26151/5E
Par 3.4.6
MARKER
118.690 MHz
-114.66 dBm
1
B
-100 dBm
START 118.000 MHz
STOP 120.000 MHz
*RB 3.00 kHz
VB 3.00 kHz
ST 666.6 msec

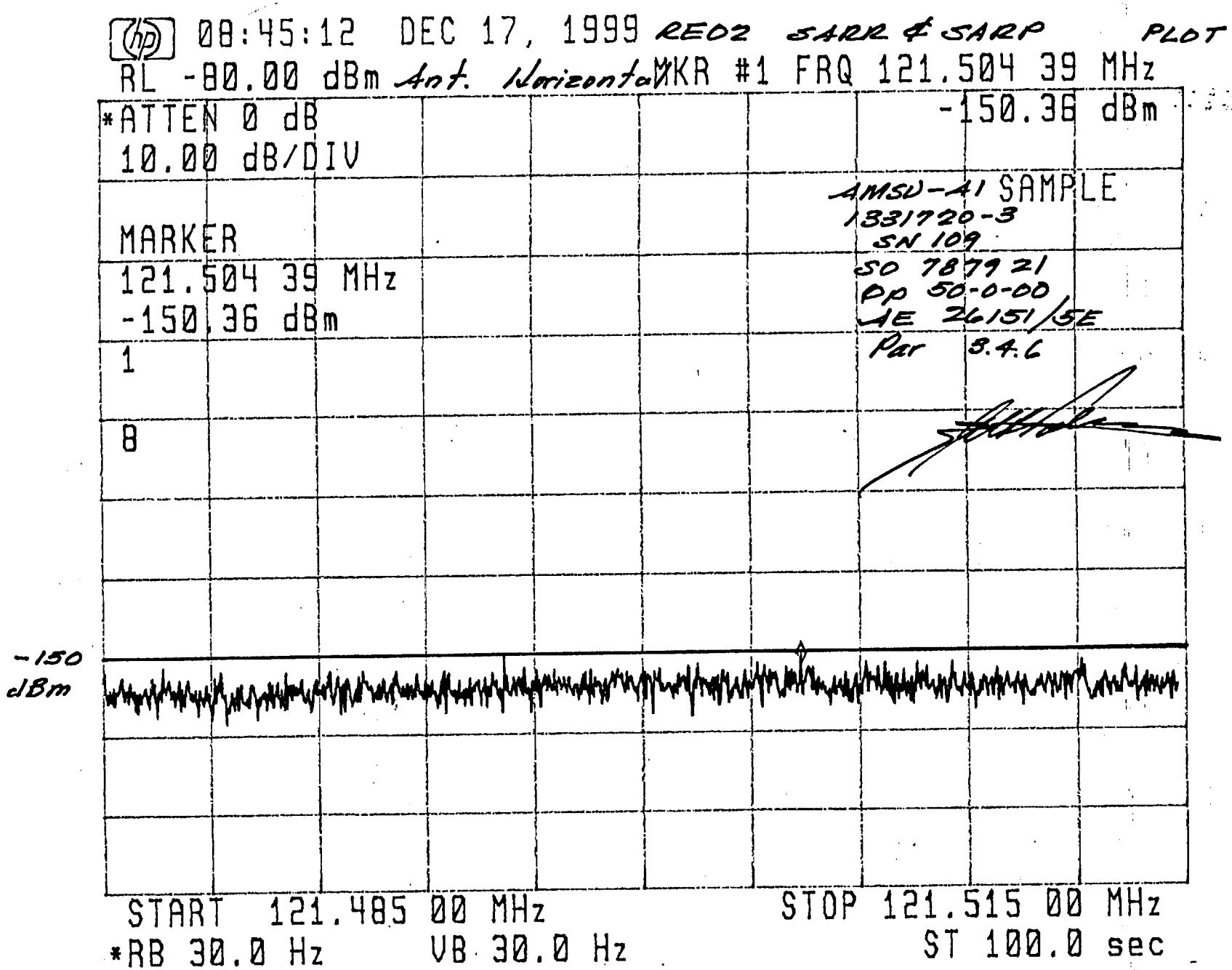

13:38:38 DEC 17, 1999 RE02 SARR & SARP PLOT 2
RL -40.00 dBm Ant. Vertical MKR #1 FRQ 119.995 MHz
*ATTEN 0 dB
-108.99 dBm
10.00 dB/DIV
AEROJET ELECTRONIC SYSTEMS
AMSU-A1 SAMPLE
1831720-3
SN 109
SO 787921
Op 50-0-00
AE 26151/SE
Par 3.4.6
MARKER
119.995 MHz
-108.99 dBm
1
B
-100 dBm
START 118.000 MHz
STOP 120.000 MHz
*RB 1.00 kHz
VB 1.00 kHz
ST 6.000 sec


08:51:18 DEC 17, 1999 RE02 SARR & SARP PLOT 3
RL -80.00 dBm Ant. Horizontal MKR #1 FRQ 121.055 MHz
-128.17 dBm
*ATTEN 0 dB
10.00 dB/DIV
AMSU-A1 SAMPLE
1351720-3
SN 109
SO 787921
OP 50-0-00
IE 26151/5E
Par 3.4.6
MARKER
121.055 MHz
-128.17 dBm
1
8
-125 dBm
START 120.000 MHz
STOP 121.450 MHz
*RB 3.00 kHz
VB 3.00 kHz
ST 483.4 msec


13:41:06 DEC 17, 1999 REO2 SARR & SARP
PLOT 4
RL -80.00 dBm Ant Vertical
MKR #1 FRQ 120.268 MHz
*ATTEN 0 dB
-128.74 dBm
10.00 dB/DIV
AEROJET ELECTRONIC SYSTEMS
AMSU-A1 SAMPLE
1331720-3
SN 109
SO 787921
Op 50-0-00
AE 26151/5E
Par 3.4.6
MARKER
120.268 MHz
-128.74 dBm
1
8
-125 dBm
START 120.000 MHz
STOP 121.450 MHz
*RB 1.00 kHz
VB 1.00 kHz
ST 4.350 sec

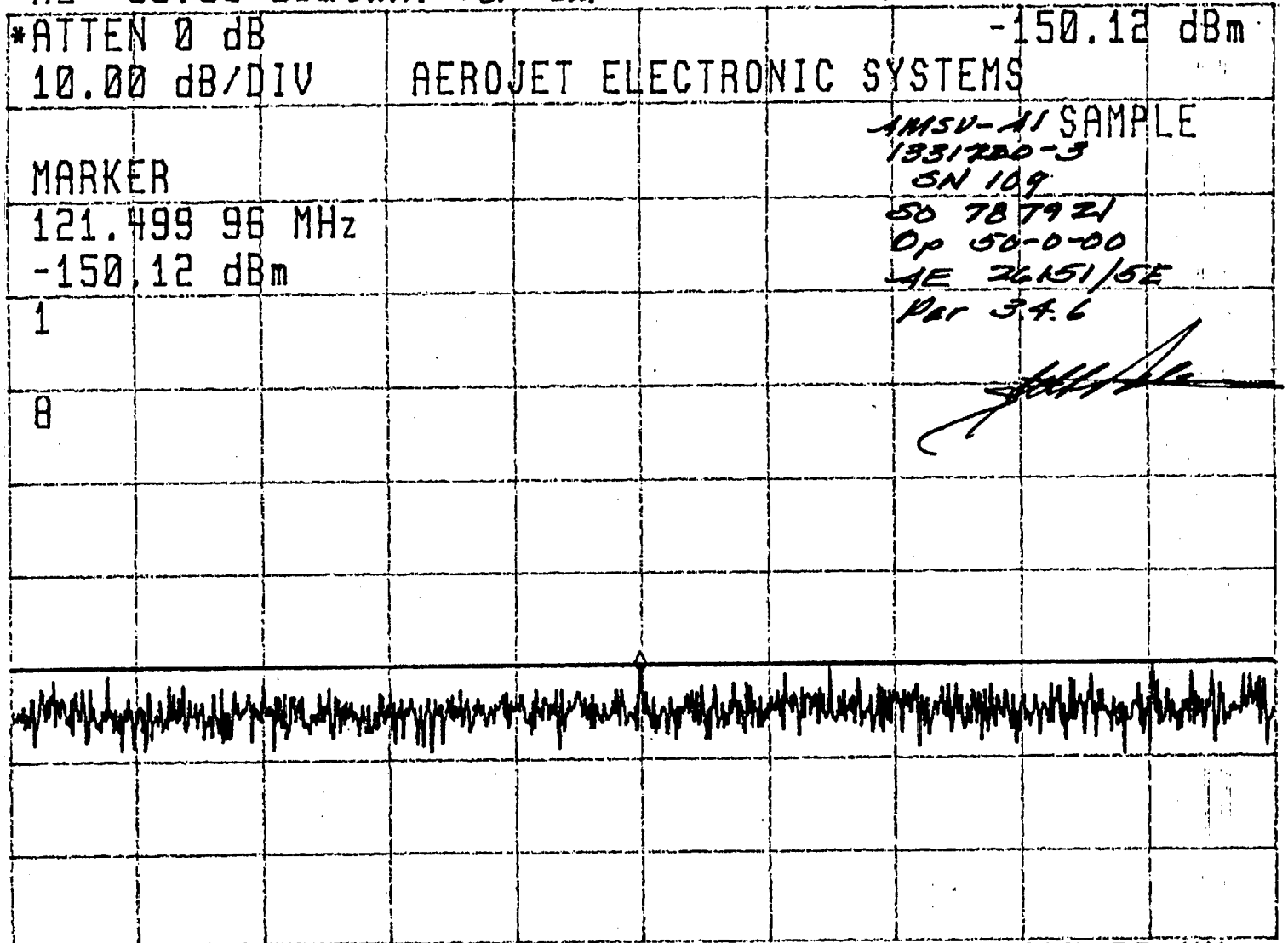

12:57:45 DEC 17, 1999 RE02 SARR & SARP PLOT 5
RL -80.00 dBm Ant. Horizonta MKR #1 FRQ 121.460 63 MHz
*ATTEN 0 dB
10.00 dB/DIV
-145.51 dBm
AEROJET ELECTRONIC SYSTEMS
AMSU-A1 SAMPLE
1381720-3
SN 109
SO 787921
OP 50-0-00
AE 26161/5E
Par 5.4.2
MARKER
121.460 63 MHz
-145.51 dBm
1
8
-145 dBm
START 121.450 00 MHz
STOP 121.485 00 MHz
*RB 30.0 Hz
*VB 10.0 kHz
ST 116.7 sec

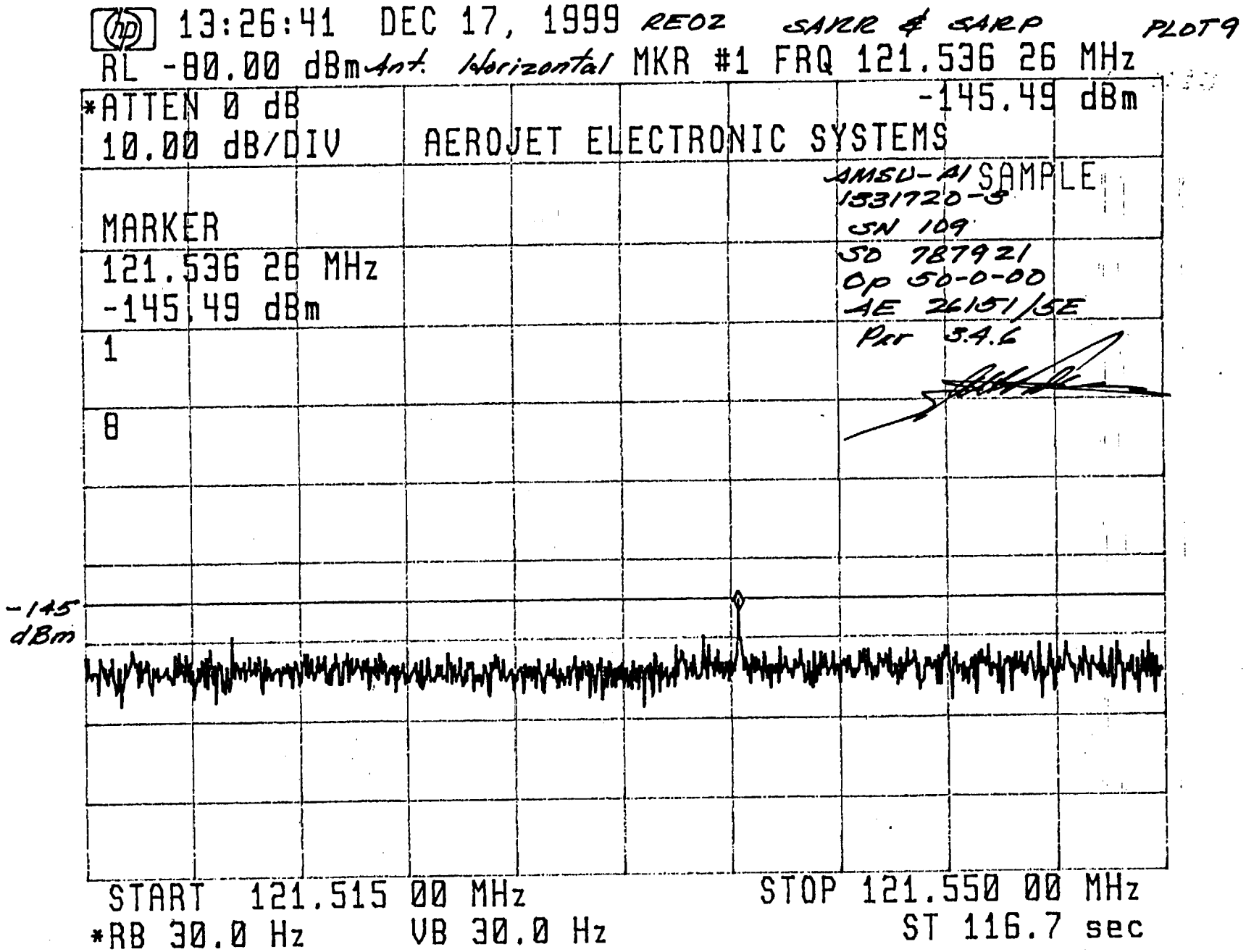

13:59:11 DEC 17, 1999 REO2 SARR & SARP PLOT 6
RL -80.00 dBm Ant Vertical MKR #1 FRQ 121.472 01 MHz
*ATTEN 0 dB
-146.05 dBm
10.00 dB/DIV
AEROJET ELECTRONIC SYSTEMS
AMSU-A1 SAMPLE
1381720-3
SN 109
SO 787921
OP 50-0-00
AE 26151/5E
Par 3.4.6
MARKER
121.472 01 MHz
-146.05 dBm
1
B
-145 dBm
START 121.450 00 MHz
STOP 121.485 00 MHz
*RB 30.0 Hz
VB 30.0 Hz
ST 116.7 sec

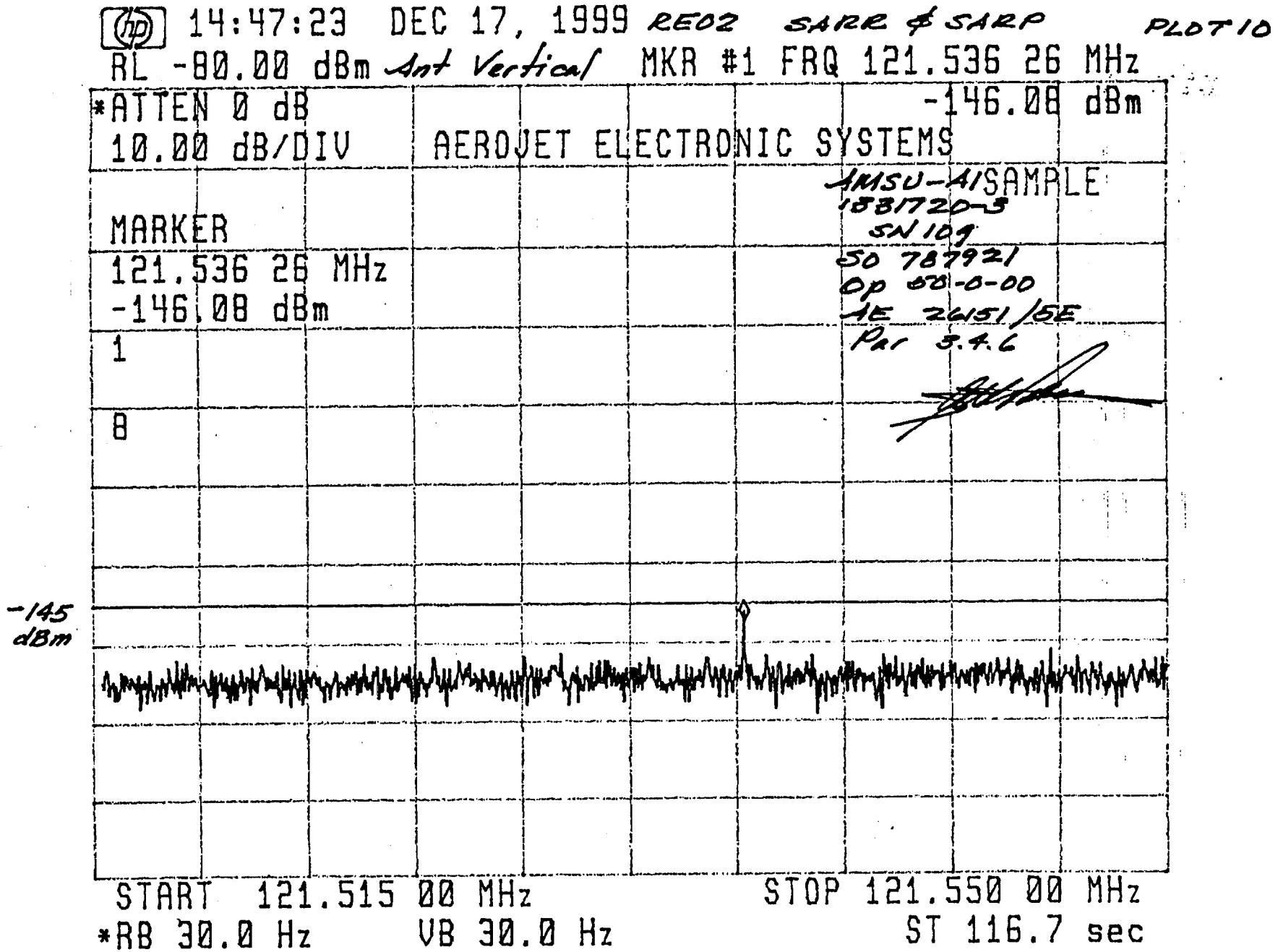

08:45:12 DEC 17, 1999 RE02 SARR & SARP PLOT 7
RL -80.00 dBm Ant. Horizonta MKR #1 FRQ 121.504 39 MHz
*ATTEN 0 dB
10.00 dB/DIV
-150.36 dBm
AMSU-A1 SAMPLE
1331720-3
SN 109
SO 787921
PP 50-0-00
AE 26151/SE
Par 3.4.6
MARKER
121.504 39 MHz
-150.36 dBm
1
B
-150 dBm
START 121.485 00 MHz
STOP 121.515 00 MHz
*RB 30.0 Hz
VB 30.0 Hz
ST 100.0 sec

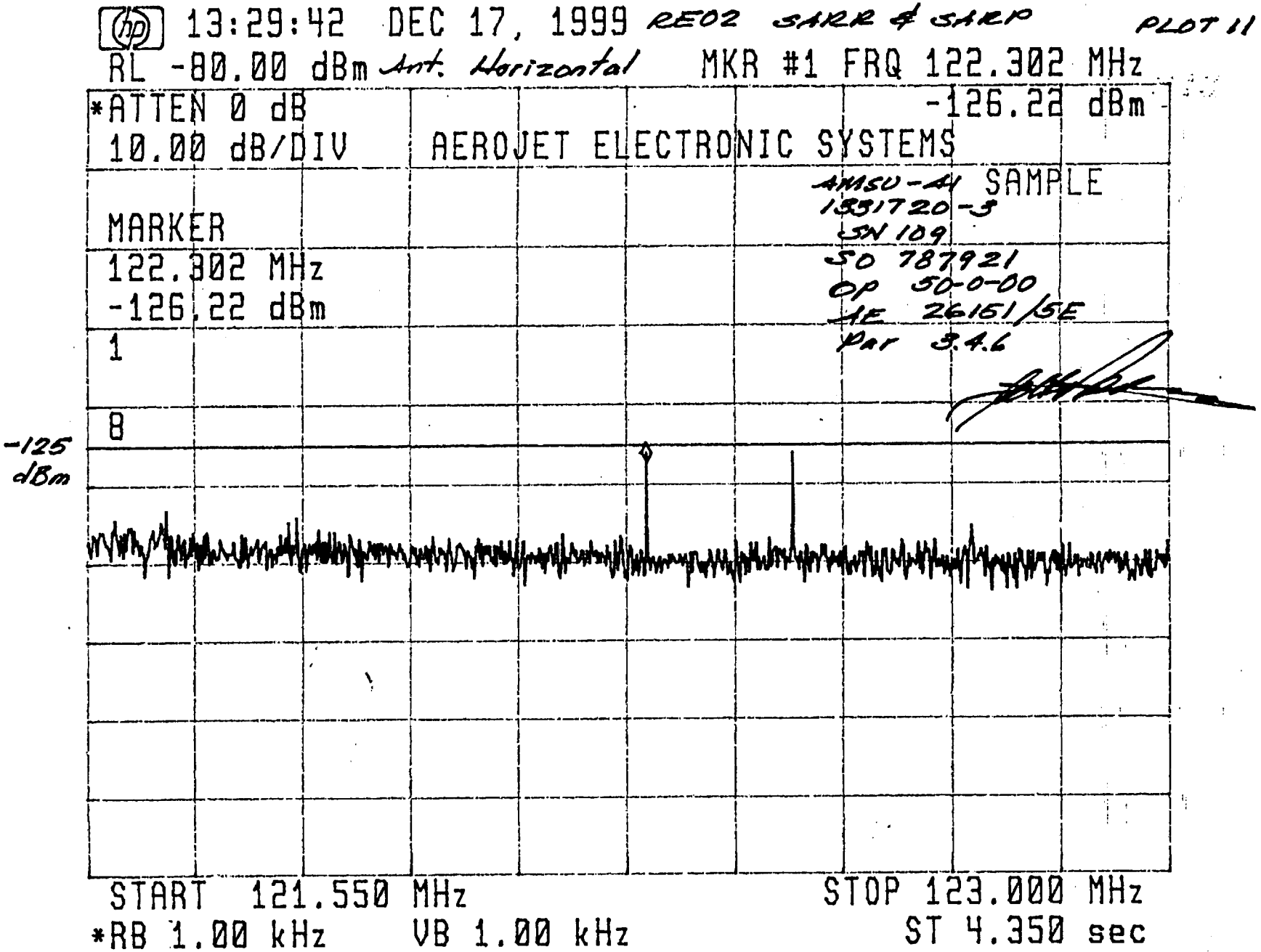
14:16:47 DEC 17, 1999 RE02 SARR & SARP PLOT 8

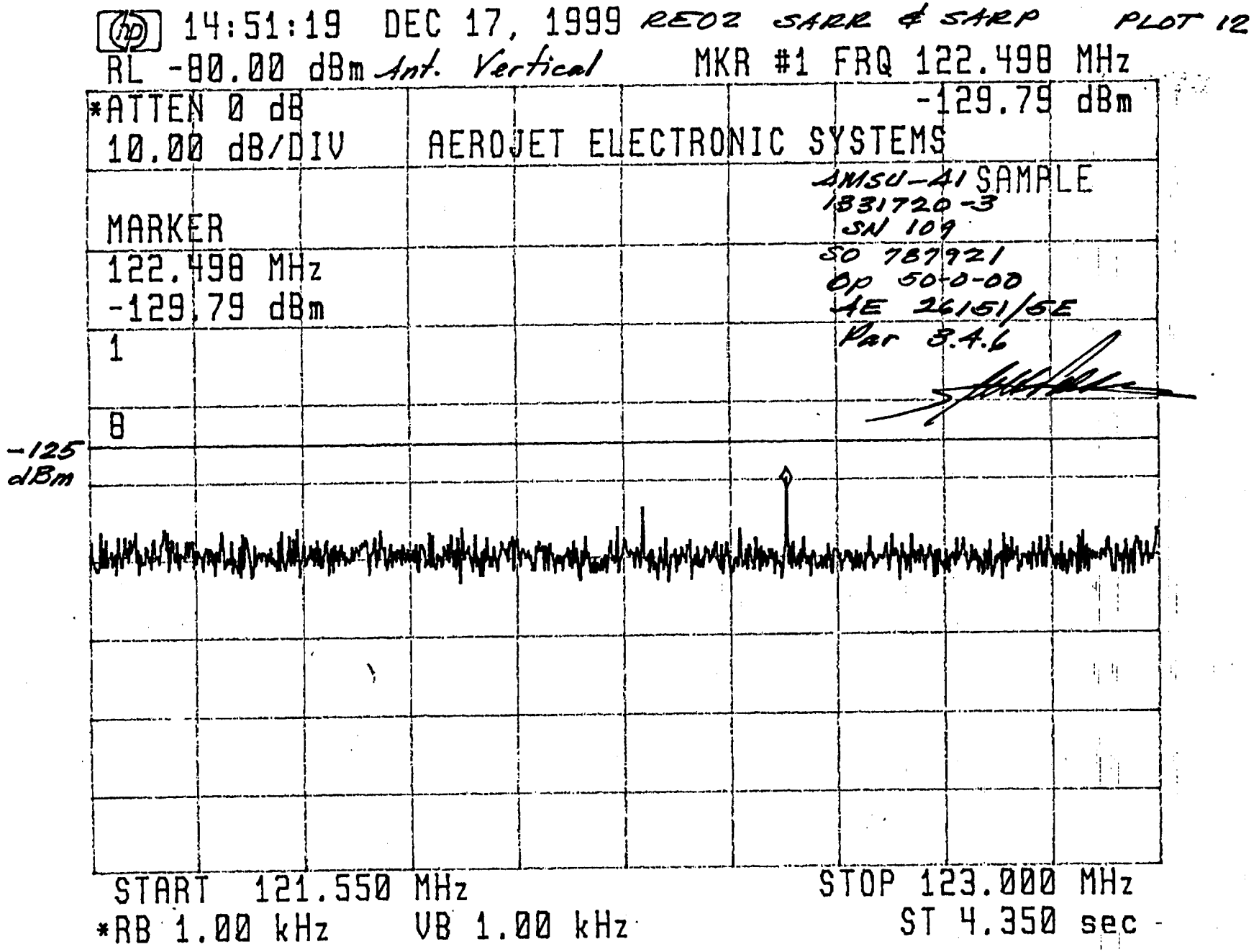
RL -80.00 dBm Ant. Vertical MKR #1 FRQ 121.499 96 MHz

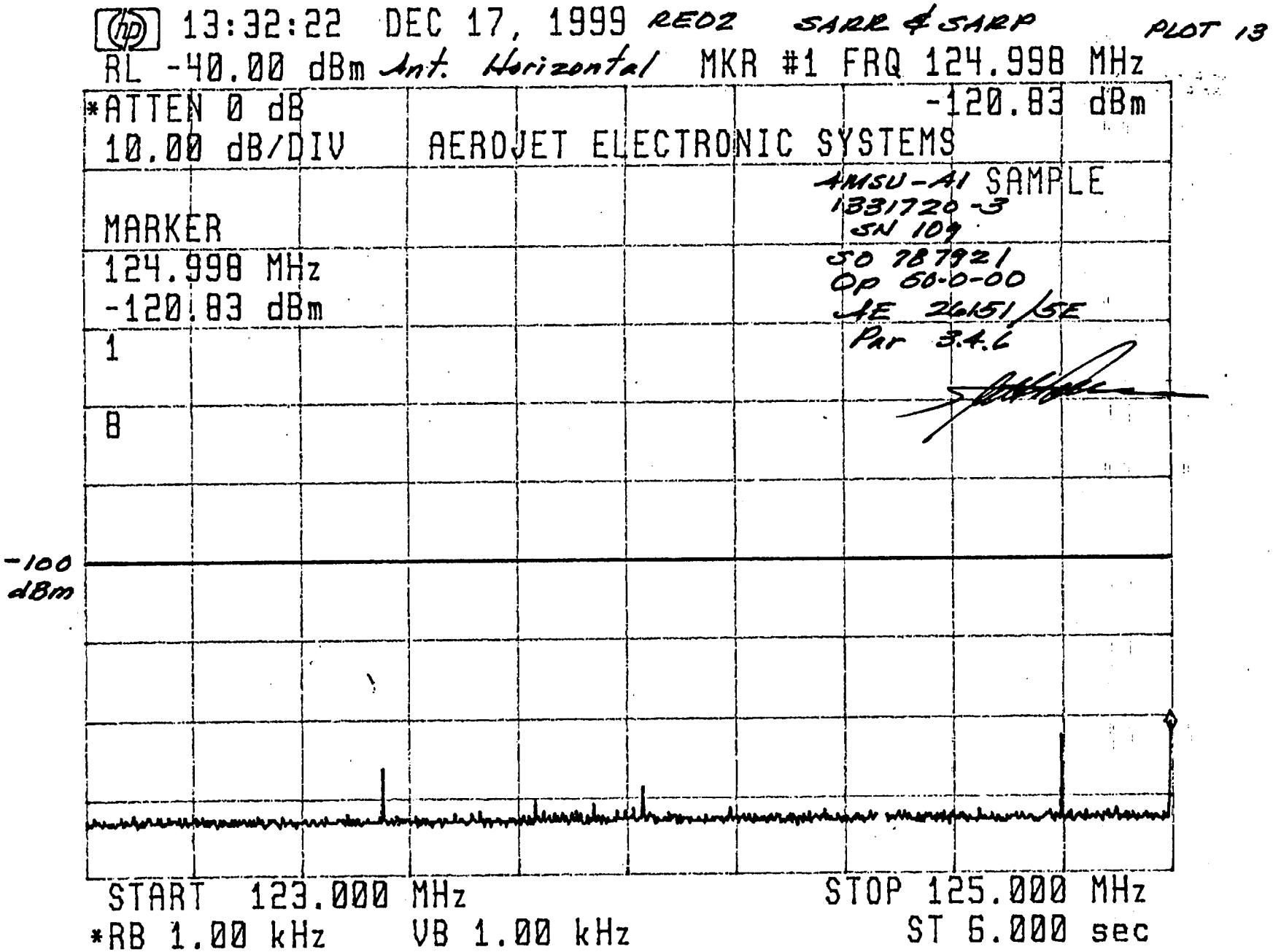


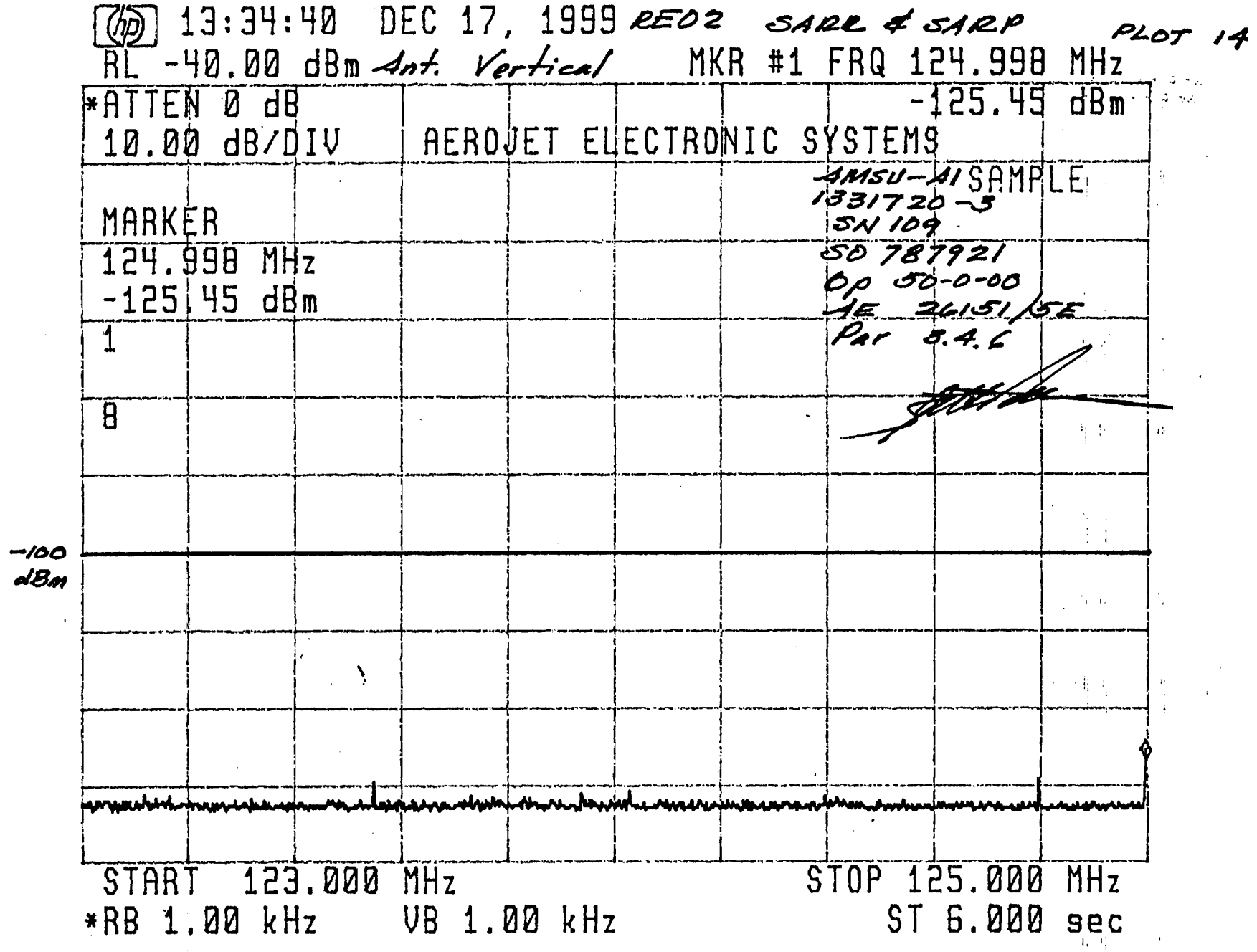

13:26:41 DEC 17, 1999 REOZ SARR & SARP PLOT9
RL -80.00 dBm Ant. Horizontal MKR #1 FRQ 121.536 26 MHz
*ATTEN 0 dB
10.00 dB/DIV
-145.49 dBm
AEROJET ELECTRONIC SYSTEMS
AMSU-A1 SAMPLE
1531720-3
SN 109
SO 787921
Op 50-0-00
AE 26151/SE
Par 3.4.6
MARKER
121.536 26 MHz
-145.49 dBm
1
8
-145 dBm
START 121.515 00 MHz
STOP 121.550 00 MHz
*RB 30.0 Hz
VB 30.0 Hz
ST 116.7 sec

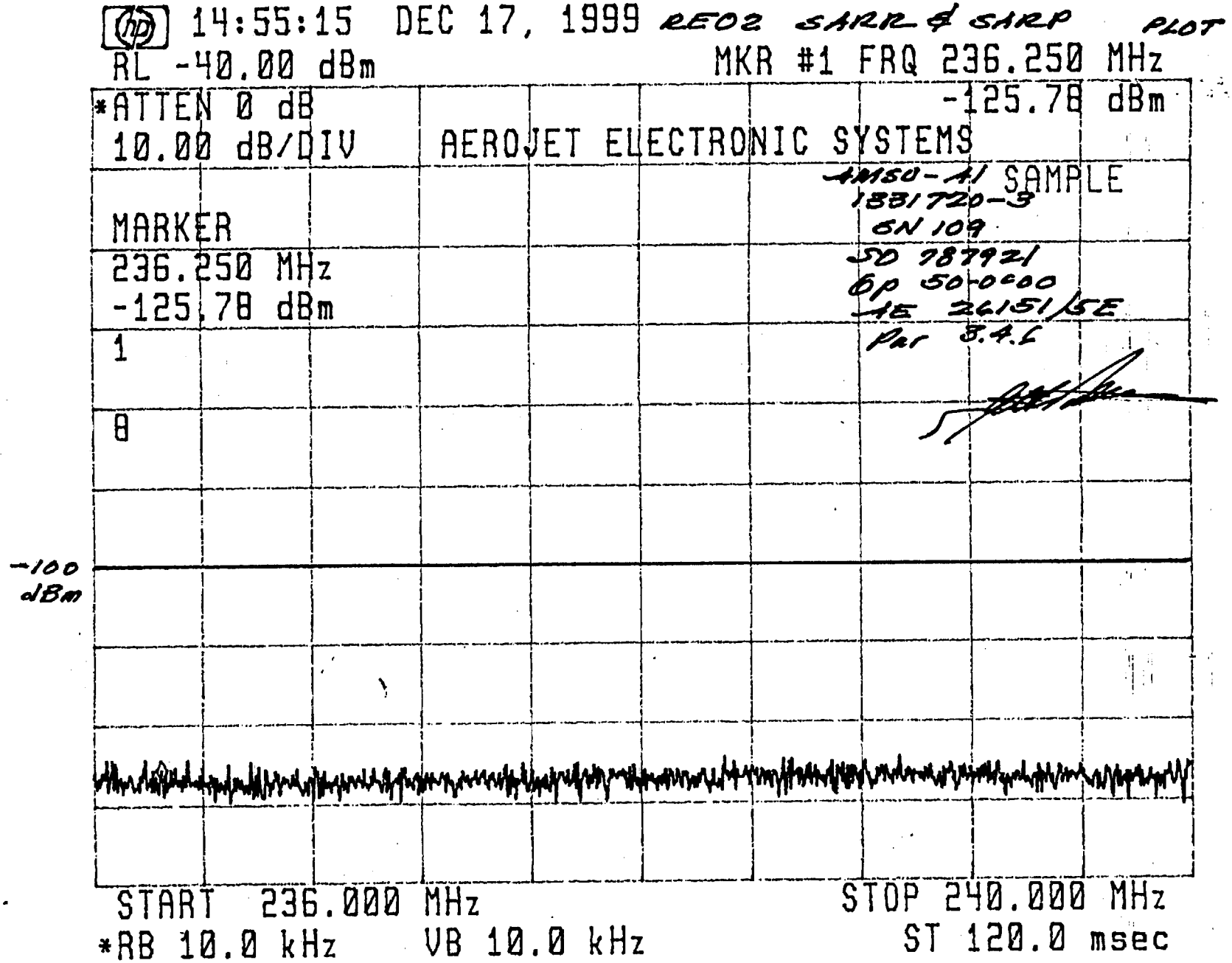

14:47:23 DEC 17, 1999 RE02 SARR & SARP PLOT 10
RL -80.00 dBm Ant Vertical MKR #1 FRQ 121.536 26 MHz
*ATTEN 0 dB
-146.08 dBm
10.00 dB/DIV
AEROJET ELECTRONIC SYSTEMS
AMSU-A1 SAMPLE
1331720-3
SN 109
SO 787921
Op 00-0-00
AE 26151/5E
Par 3.4.6
MARKER
121.536 26 MHz
-146.08 dBm
1
8
-145 dBm
START 121.515 00 MHz
STOP 121.550 00 MHz
*RB 30.0 Hz
VB 30.0 Hz
ST 116.7 sec

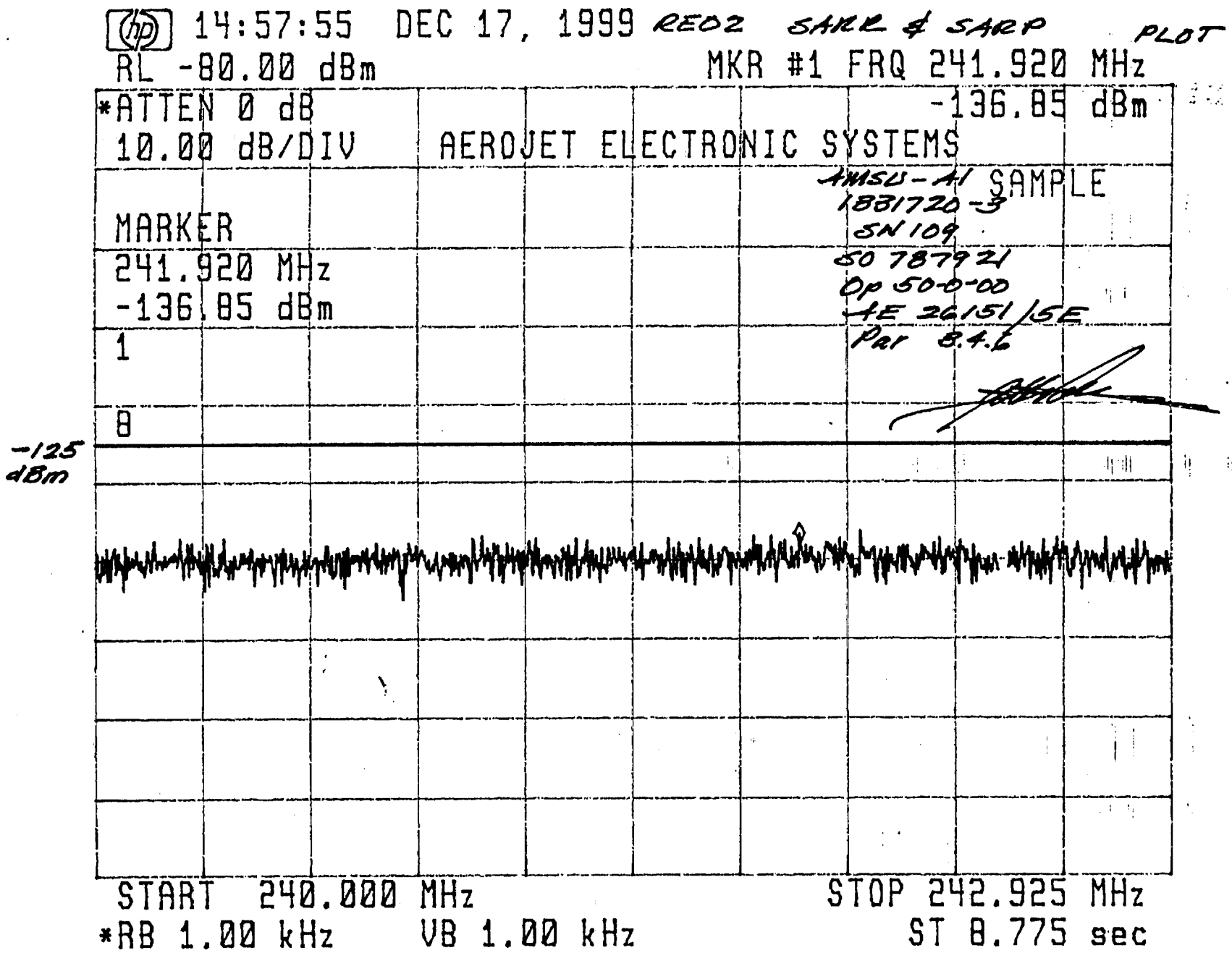

13:29:42 DEC 17, 1999 RE02 SARR & SARP PLOT 11
RL -80.00 dBm Ant. Horizontal MKR #1 FRQ 122.302 MHz
*ATTEN 0 dB
10.00 dB/DIV
-126.22 dBm
AEROJET ELECTRONIC SYSTEMS
AN/SQ-41 SAMPLE
1331720-3
SN 109
SO 787921
OP 50-0-00
IE 26161/SE
Par 3.4.6
MARKER
122.302 MHz
-126.22 dBm
1
B
-125 dBm
START 121.550 MHz
STOP 123.000 MHz
*RB 1.00 kHz
VB 1.00 kHz
ST 4.350 sec

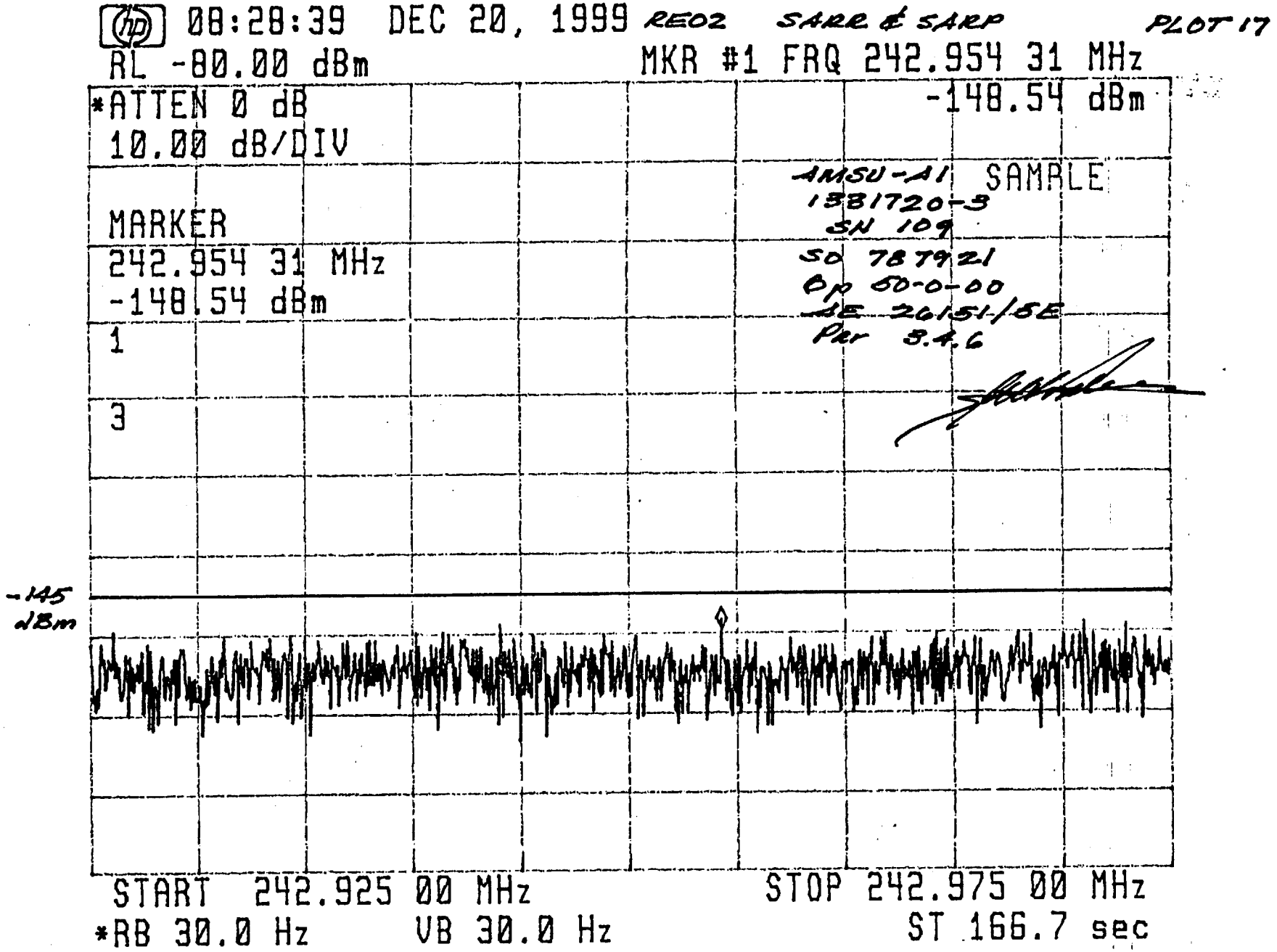

14:51:19 DEC 17, 1999 REO2 SARR & SARP PLOT 12
RL -80.00 dBm Ant. Vertical
MKR #1 FRQ 122.498 MHz
*ATTEN 0 dB
-129.79 dBm
10.00 dB/DIV
AEROJET ELECTRONIC SYSTEMS
AMSU-A1 SAMPLE
1831720-3
SN 109
SO 787921
OP 50-0-00
AE 26151/5E
Par 3.4.6
MARKER
122.498 MHz
-129.79 dBm
1
B
-125 dBm
START 121.550 MHz
STOP 123.000 MHz
*RB 1.00 kHz
VB 1.00 kHz
ST 4.350 sec

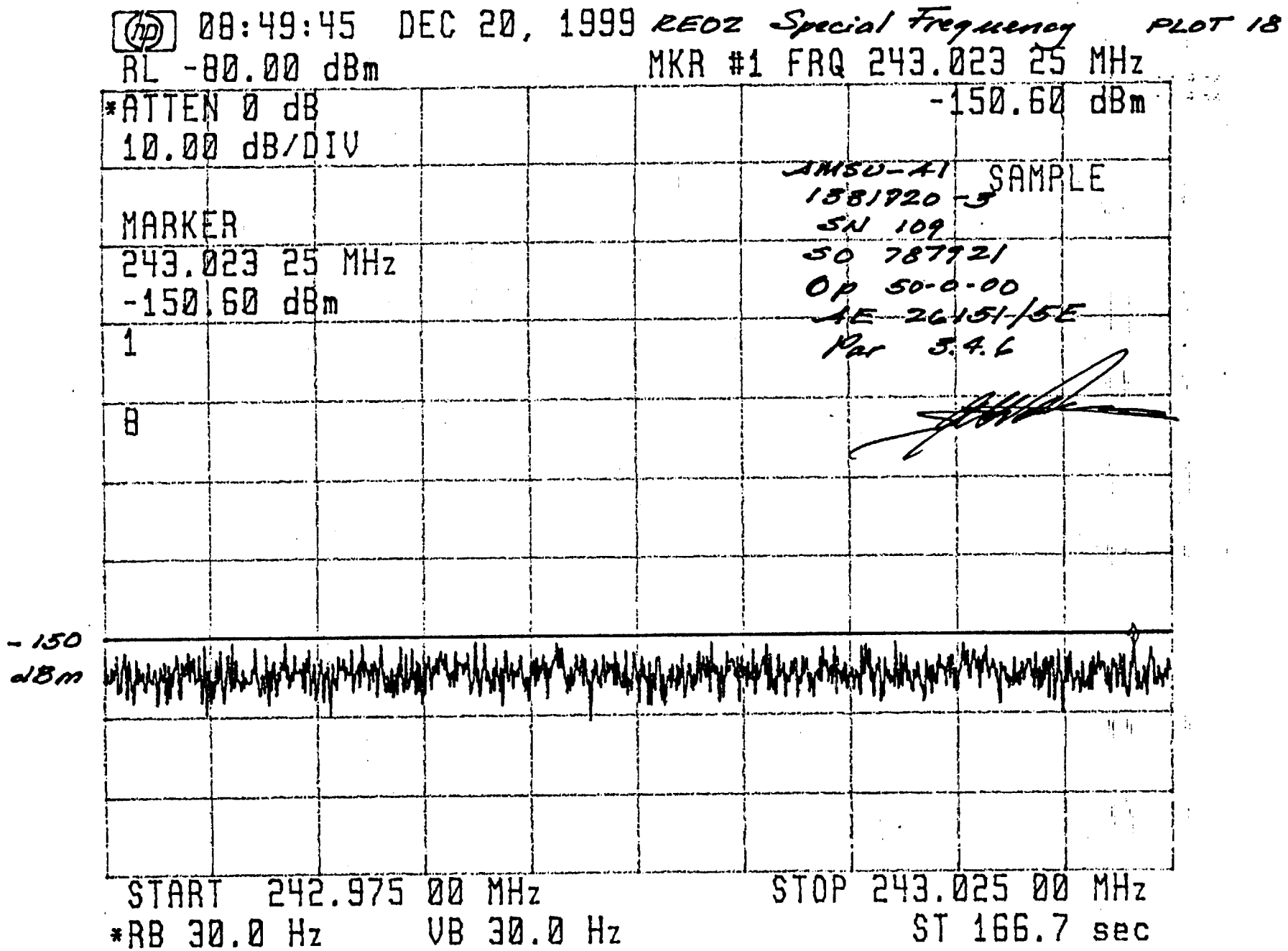

13:32:22 DEC 17, 1999 RE02 SARR & SARP PLOT 13
RL -40.00 dBm Ant. Horizontal MKR #1 FRQ 124.998 MHz
*ATTEN 0 dB
-120.83 dBm
10.00 dB/DIV
AEROJET ELECTRONIC SYSTEMS
AMSU-A1 SAMPLE
1331720-3
SN 109
SO 787921
Op 60-0-00
AE 26151/GSE
Par 3.4.6
MARKER
124.998 MHz
-120.83 dBm
1
B
-100 dBm
START 123.000 MHz
STOP 125.000 MHz
*RB 1.00 kHz
VB 1.00 kHz
ST 6.000 sec

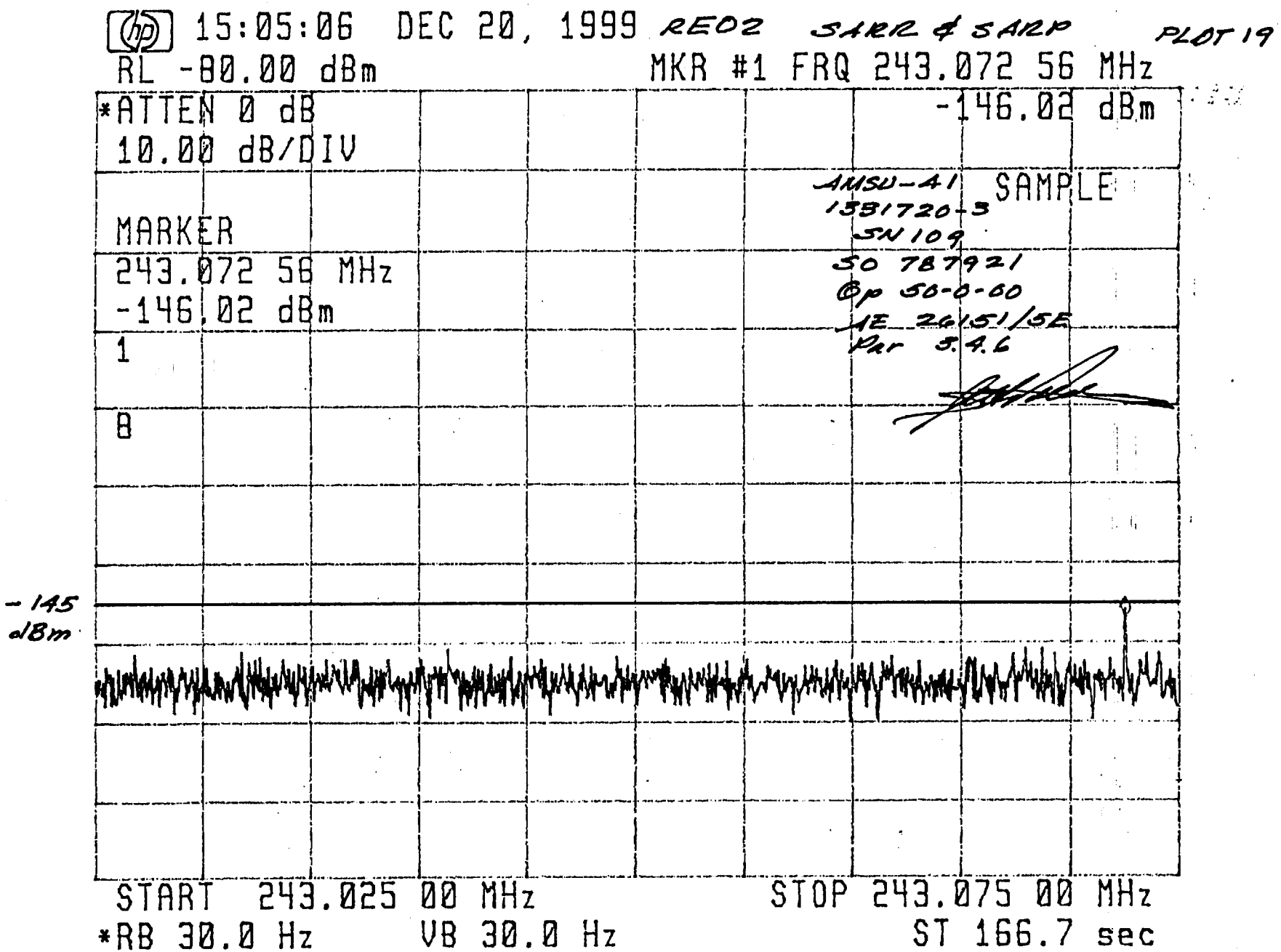

13:34:40 DEC 17, 1999 RE02 SARL & SARP PLOT 14
RL -40.00 dBm Ant. Vertical MKR #1 FRQ 124.998 MHz
*ATTEN 0 dB
-125.45 dBm
10.00 dB/DIV
AEROJET ELECTRONIC SYSTEMS
AMSU-A1 SAMPLE
1331720-5
SN 109
SO 787921
Op 50-0-00
AE 26151/5E
Par 5.4.6
MARKER
124.998 MHz
-125.45 dBm
1
8
-100 dBm
START 123.000 MHz
STOP 125.000 MHz
*RB 1.00 kHz
VB 1.00 kHz
ST 6.000 sec

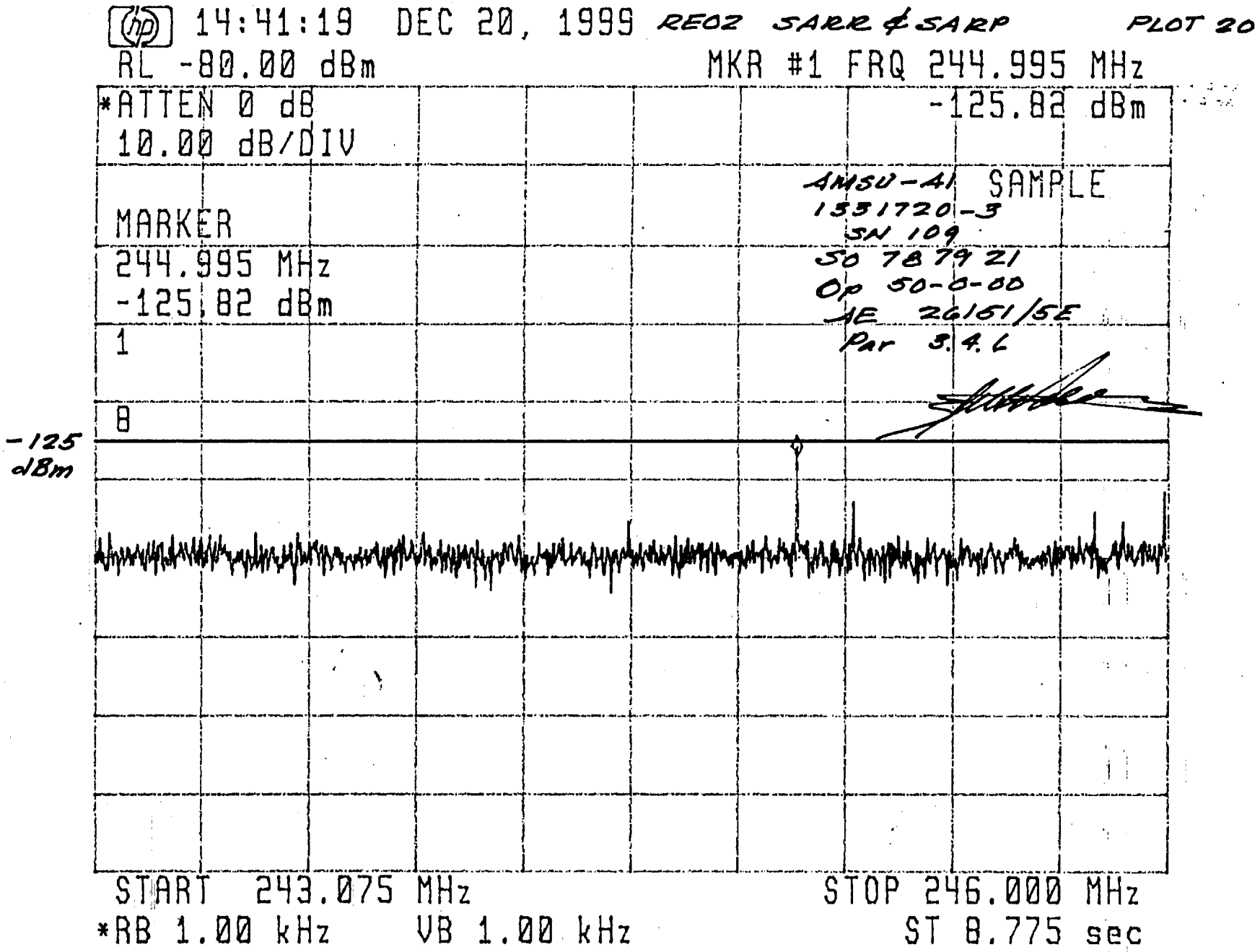

14:55:15 DEC 17, 1999 RE02 SARR & SARP PLOT 15
RL -40.00 dBm
MKR #1 FRQ 236.250 MHz
*ATTEN 0 dB
-125.78 dBm
10.00 dB/DIV
AEROJET ELECTRONIC SYSTEMS
AM150-A1 SAMPLE
1831720-3
SN 109
SO 787921
6P 50-0000
-15 24151BE
Par 3.4.L
MARKER
236.250 MHz
-125.78 dBm
1
8
-100 dBm
START 236.000 MHz
STOP 240.000 MHz
*RB 10.0 kHz
VB 10.0 kHz
ST 120.0 msec

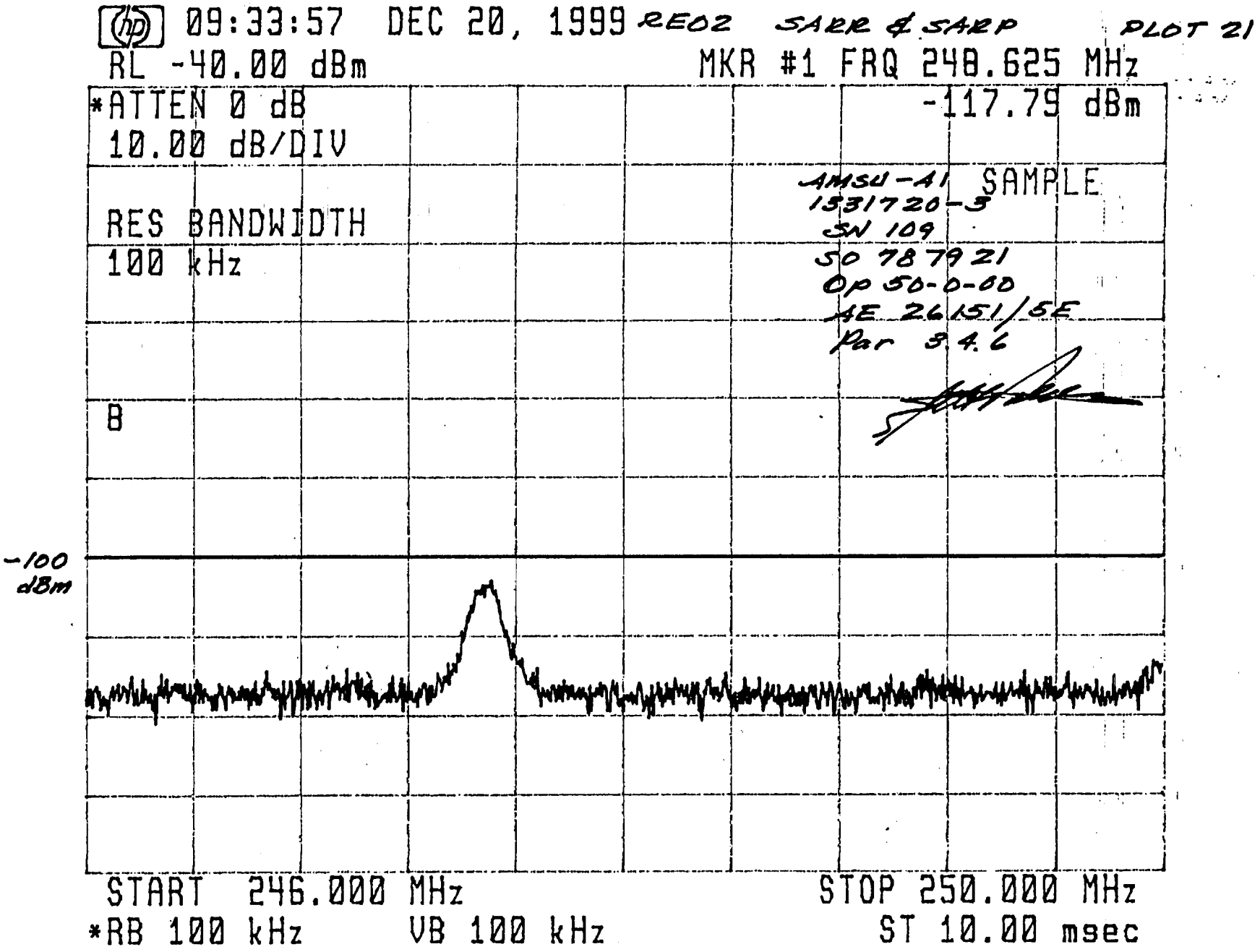

14:57:55 DEC 17, 1999 REO2 SARR & SARP PLOT 16
RL -80.00 dBm
MKR #1 FRQ 241.920 MHz
*ATTEN 0 dB
-136.85 dBm
10.00 dB/DIV
AEROJET ELECTRONIC SYSTEMS
AMSU-A1 SAMPLE
1881720-3
SN109
50 787921
Op 50-0-00
4E 26151/5E
Par 8.4.6
MARKER
241.920 MHz
-136.85 dBm
1
8
-125 dBm
START 240.000 MHz
STOP 242.925 MHz
*RB 1.00 kHz
VB 1.00 kHz
ST 8.775 sec

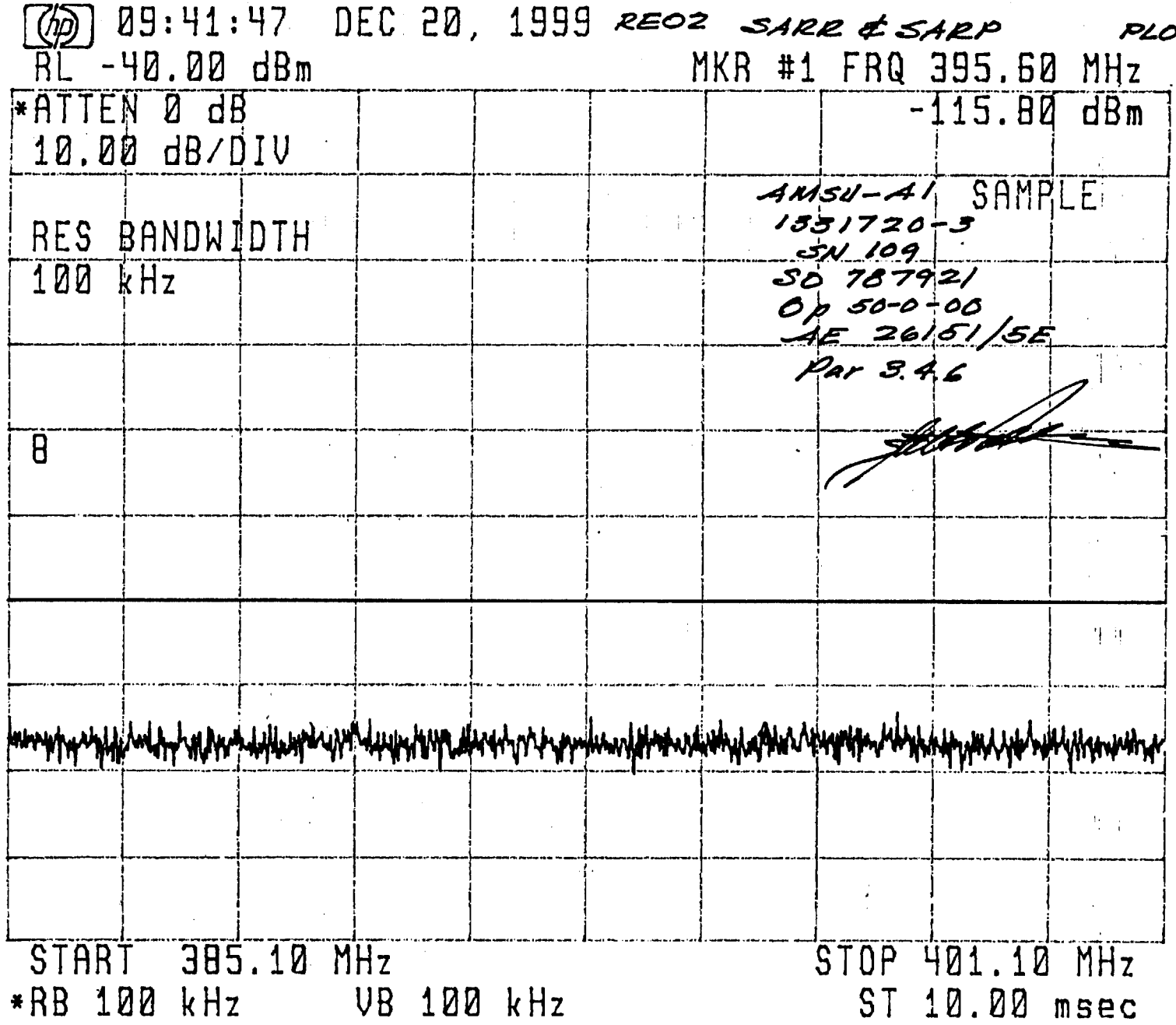

08:28:39 DEC 20, 1999 REO2 SARE & SARP PLOT 17
RL -80.00 dBm
MKR #1 FRQ 242.954 31 MHz
*ATTEN 0 dB
10.00 dB/DIV
-148.54 dBm
AMSU-A1 SAMPLE
1581720-3
SN 109
SO 787921
OP 50-0-00
DE 26151-/5E
Per 5.4.6
MARKER
242.954 31 MHz
-148.54 dBm
1
3
-145 dBm
START 242.925 00 MHz
STOP 242.975 00 MHz
*RB 30.0 Hz
VB 30.0 Hz
ST 166.7 sec

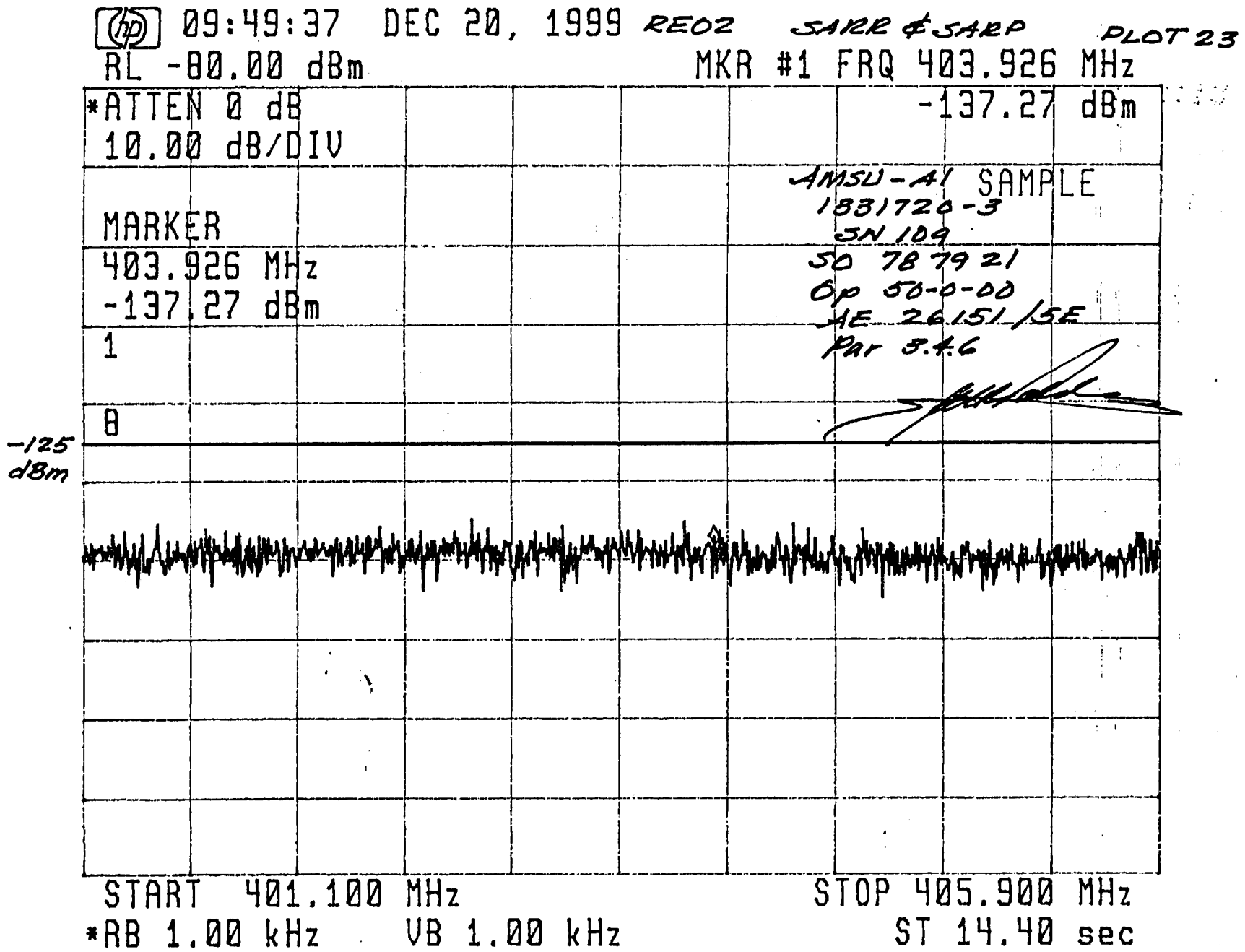

08:49:45 DEC 20, 1999 REOZ Special Frequency PLOT 18
RL -80.00 dBm
MKR #1 FRQ 243.023 25 MHz
*ATTEN 0 dB
-150.60 dBm
10.00 dB/DIV
AN50-41 SAMPLE
1581920-3
SN 109
SO 787721
Op 50-0-00
AE 26151-/5E
Par 5.4.6
MARKER
243.023 25 MHz
-150.60 dBm
1
B
-150 dBm
START 242.975 00 MHz
STOP 243.025 00 MHz
*RB 30.0 Hz
VB 30.0 Hz
ST 166.7 sec

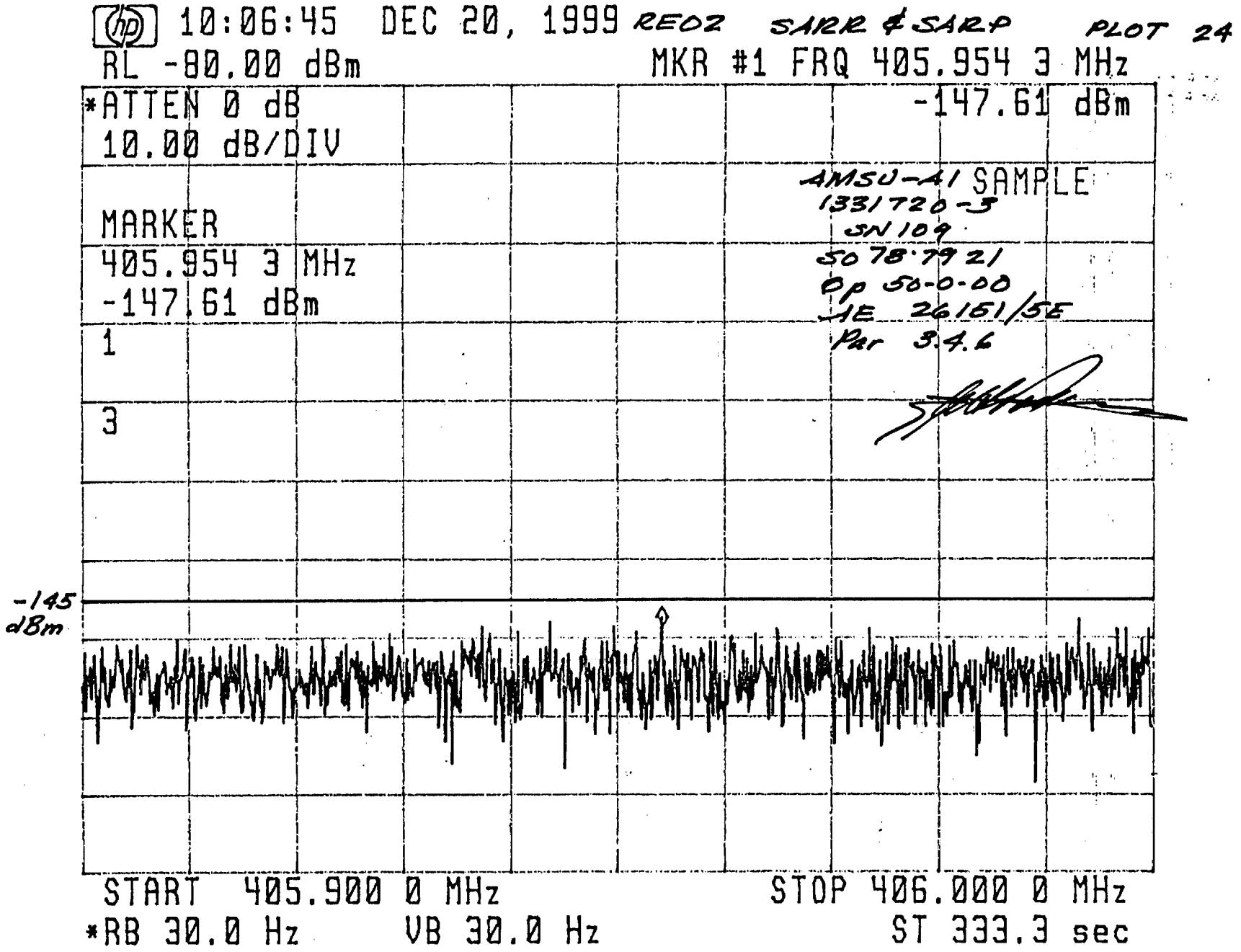

15:05:06 DEC 20, 1999 REO2 SAR & SARP PLOT 19
RL -80.00 dBm
MKR #1 FRQ 243.072 56 MHz
*ATTEN 0 dB
10.00 dB/DIV
-146.02 dBm
ANSW-41 SAMPLE
1331720-3
SN109
SO 787921
@p 50-0-60
1E 2615I/5E
Par 5.4.6
MARKER
243.072 56 MHz
-146.02 dBm
1
B
-145 dBm
START 243.025 00 MHz
STOP 243.075 00 MHz
*RB 30.0 Hz
VB 30.0 Hz
ST 166.7 sec

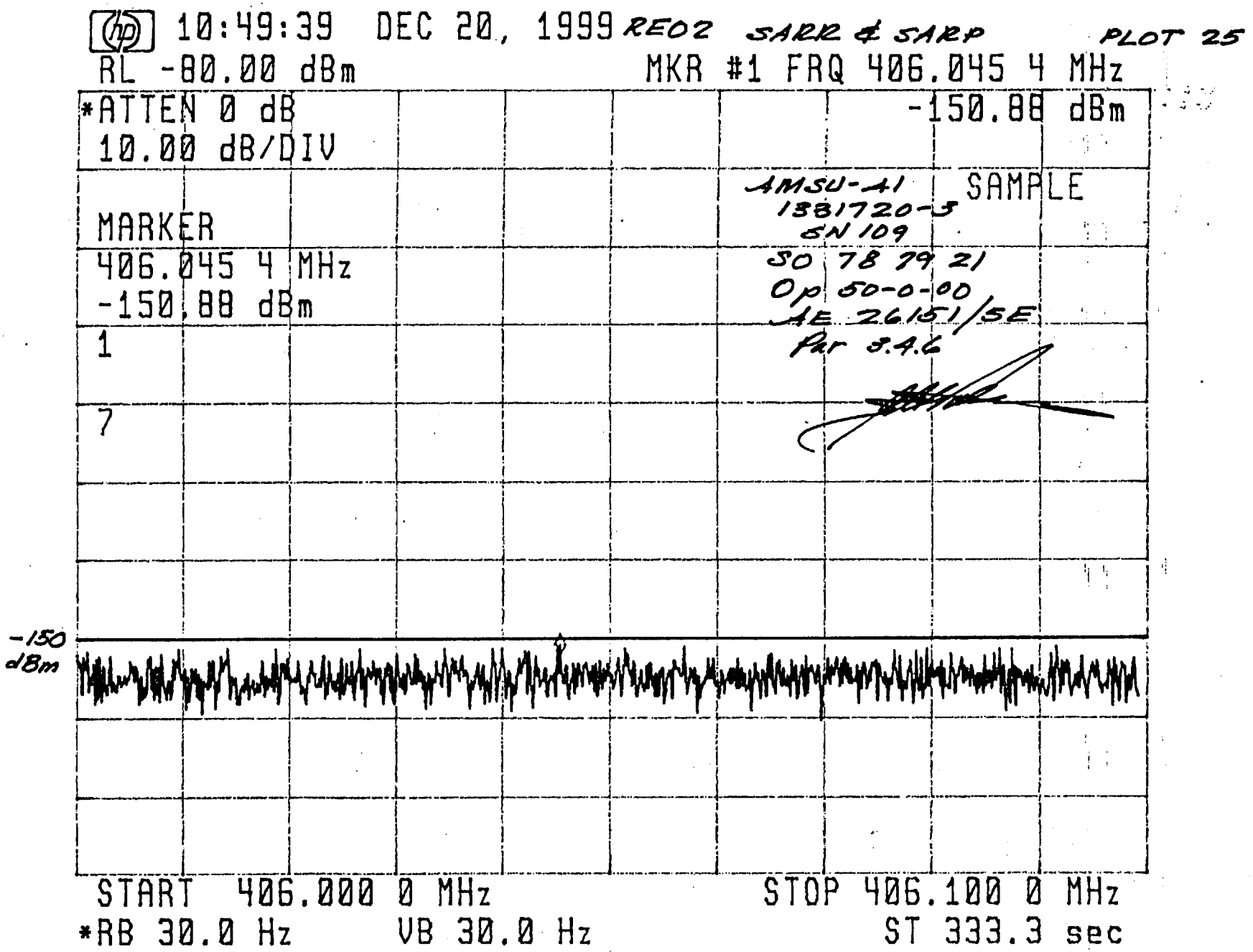

14:41:19 DEC 20, 1999 REOZ SARR & SARP PLOT 20
RL -80.00 dBm
MKR #1 FRQ 244.995 MHz
*ATTEN 0 dB
10.00 dB/DIV
-125.82 dBm
AMSU-A1 SAMPLE
1331720-3
SN 109
50 78 79 21
Op 50-0-00
AE 26161/5E
Par 3.4.6
MARKER
244.995 MHz
-125.82 dBm
1
B
-125 dBm
START 243.075 MHz
STOP 246.000 MHz
*RB 1.00 kHz
VB 1.00 kHz
ST 8.775 sec

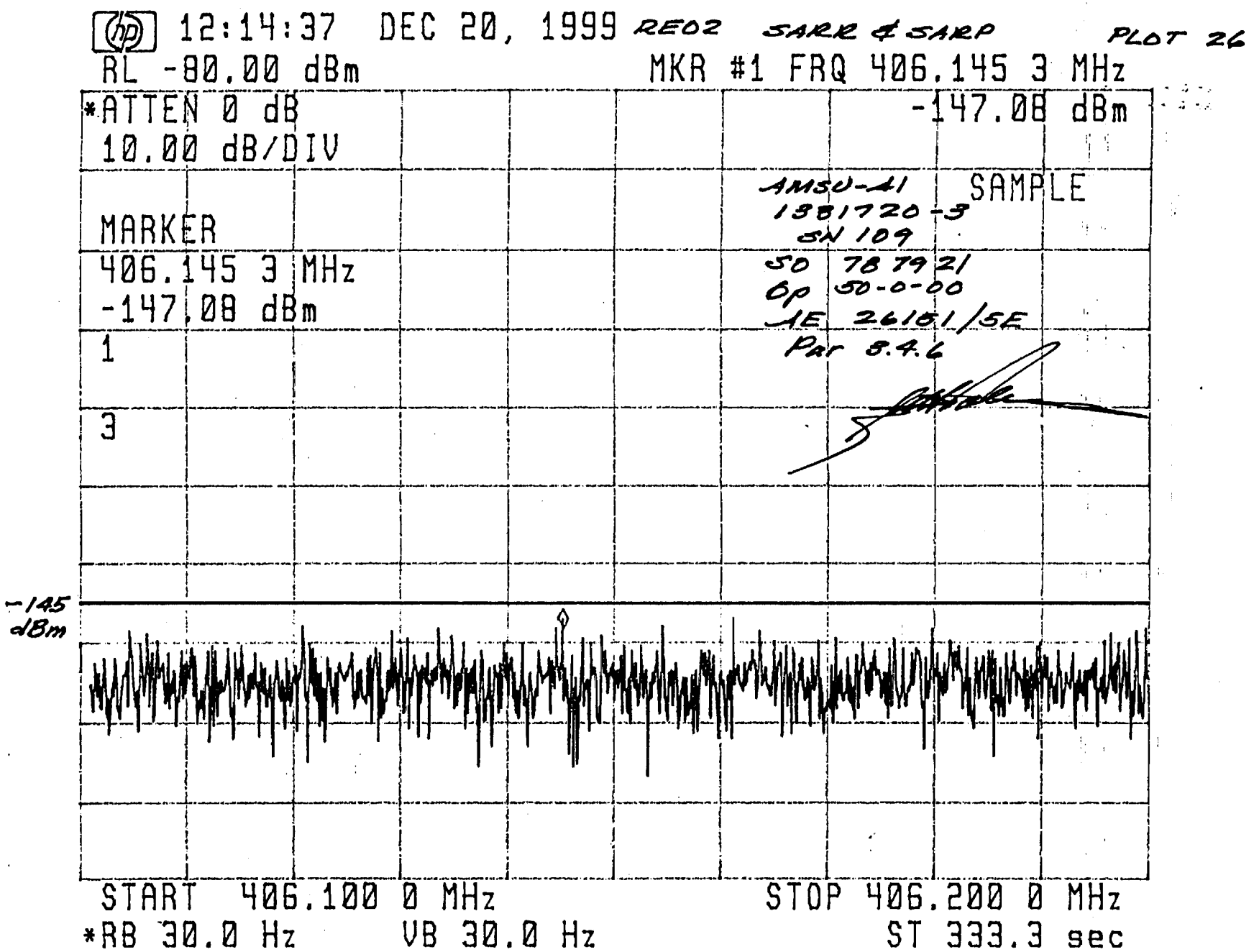

09:33:57 DEC 20, 1999 REO2 SARR & SARP PLOT 21
RL -40.00 dBm
MKR #1 FRQ 248.625 MHz
*ATTEN 0 dB
-117.79 dBm
10.00 dB/DIV
AMSU-A1 SAMPLE
1531720-3
SN 109
SO 78 79 21
Op 50-0-00
4E 26151/5E
Par 3.4.6
RES BANDWIDTH
100 kHz
B
-100 dBm
START 246.000 MHz
STOP 250.000 MHz
*RB 100 kHz
VB 100 kHz
ST 10.00 msec

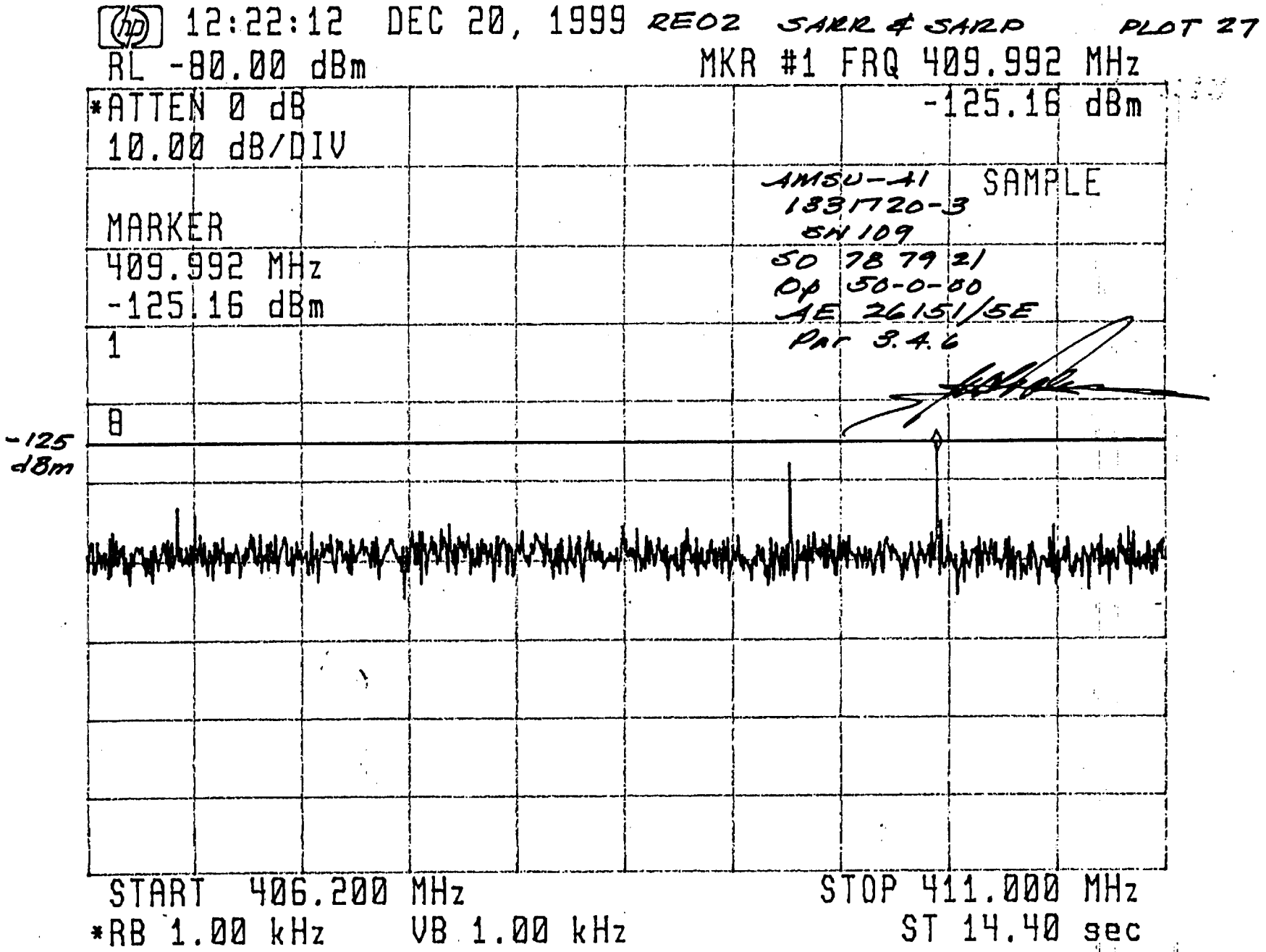

09:41:47 DEC 20, 1999 RE02 SARR & SARP PLOT 22
RL -40.00 dBm
MKR #1 FRQ 395.60 MHz
*ATTEN 0 dB
10.00 dB/DIV
-115.80 dBm
AMSU-A1 SAMPLE
1331720-3
SN 109
SO 787921
Op 50-0-00
AE 26151/5E
Par 3.4.6
RES BANDWIDTH
100 kHz
B
-100 dBm
START 385.10 MHz
STOP 401.10 MHz
*RB 100 kHz
VB 100 kHz
ST 10.00 msec

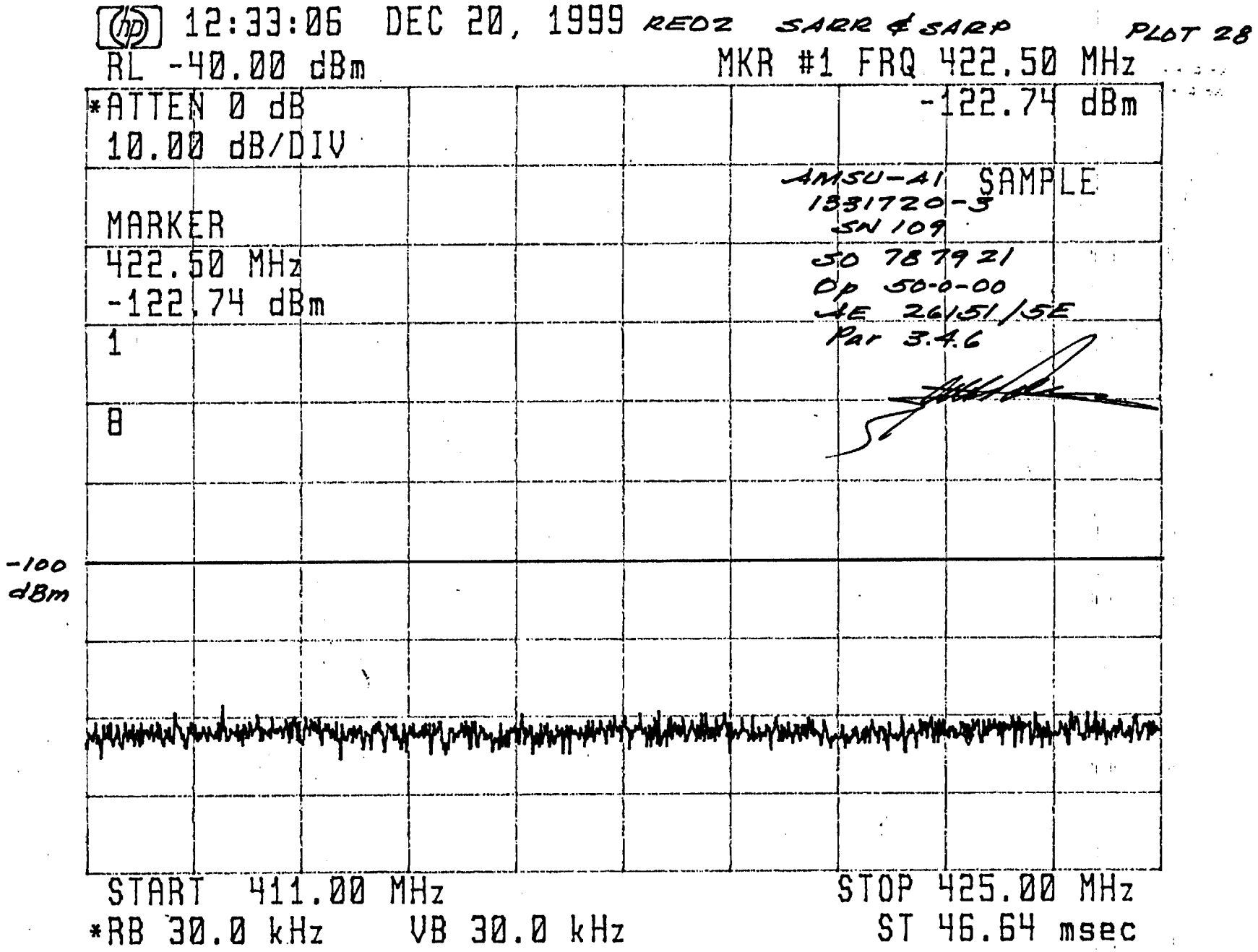

09:49:37 DEC 20, 1999 REO2 SARR & SARP PLOT 23
RL -80.00 dBm
MKR #1 FRQ 403.926 MHz
*ATTEN 0 dB
10.00 dB/DIV
-137.27 dBm
AMSU-A1 SAMPLE
1331720-3
SN 109
50 78 79 21
Op 50-0-00
AE 26151/SE
Par 3.4.6
MARKER
403.926 MHz
-137.27 dBm
1
8
-125 dBm
START 401.100 MHz
STOP 405.900 MHz
*RB 1.00 kHz
VB 1.00 kHz
ST 14.40 sec

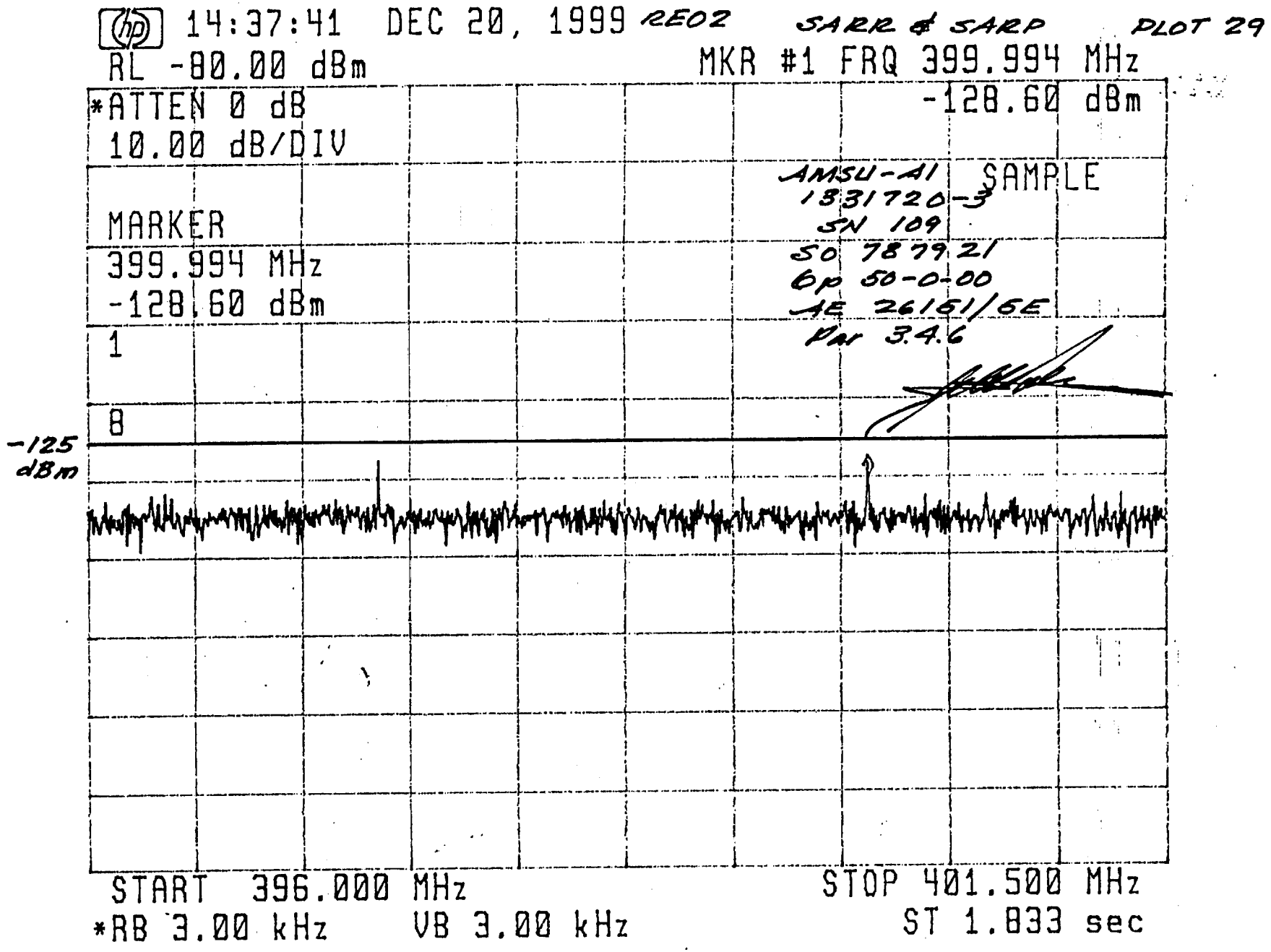

10:06:45 DEC 20, 1999 REO2 SARR & SARP PLOT 24
RL -80.00 dBm
MKR #1 FRQ 405.954 3 MHz
*ATTEN 0 dB
-147.61 dBm
10.00 dB/DIV
AMSU-A1 SAMPLE
1331720-3
SN109
5078·7921
Op 50-0-00
IE 26151/5E
Par 3.4.6
MARKER
405.954 3 MHz
-147.61 dBm
1
3
-145 dBm
START 405.900 0 MHz
STOP 406.000 0 MHz
*RB 30.0 Hz
VB 30.0 Hz
ST 333.3 sec

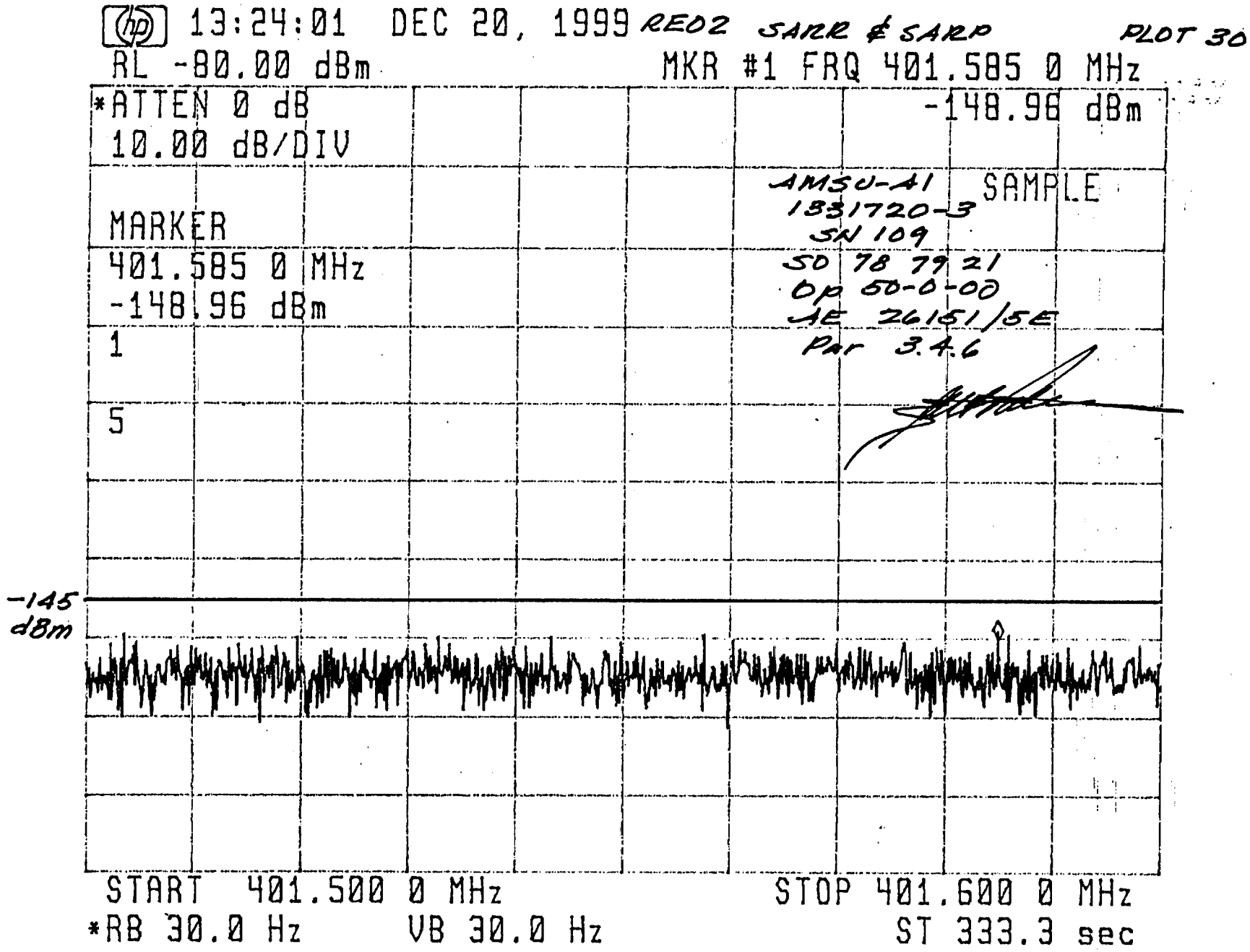

10:49:39 DEC 20, 1999 REO2 SARR & SARP PLOT 25
RL -80.00 dBm
MKR #1 FRQ 406.045 4 MHz
*ATTEN 0 dB
10.00 dB/DIV
-150.88 dBm
AMSU-A1 SAMPLE
1381720-5
SN 109
SO 78 79 21
Op 50-0-00
AE 26151/SE
Par 8.4.6
MARKER
406.045 4 MHz
-150.88 dBm
1
7
-150 dBm
START 406.000 0 MHz
STOP 406.100 0 MHz
*RB 30.0 Hz
VB 30.0 Hz
ST 333.3 sec

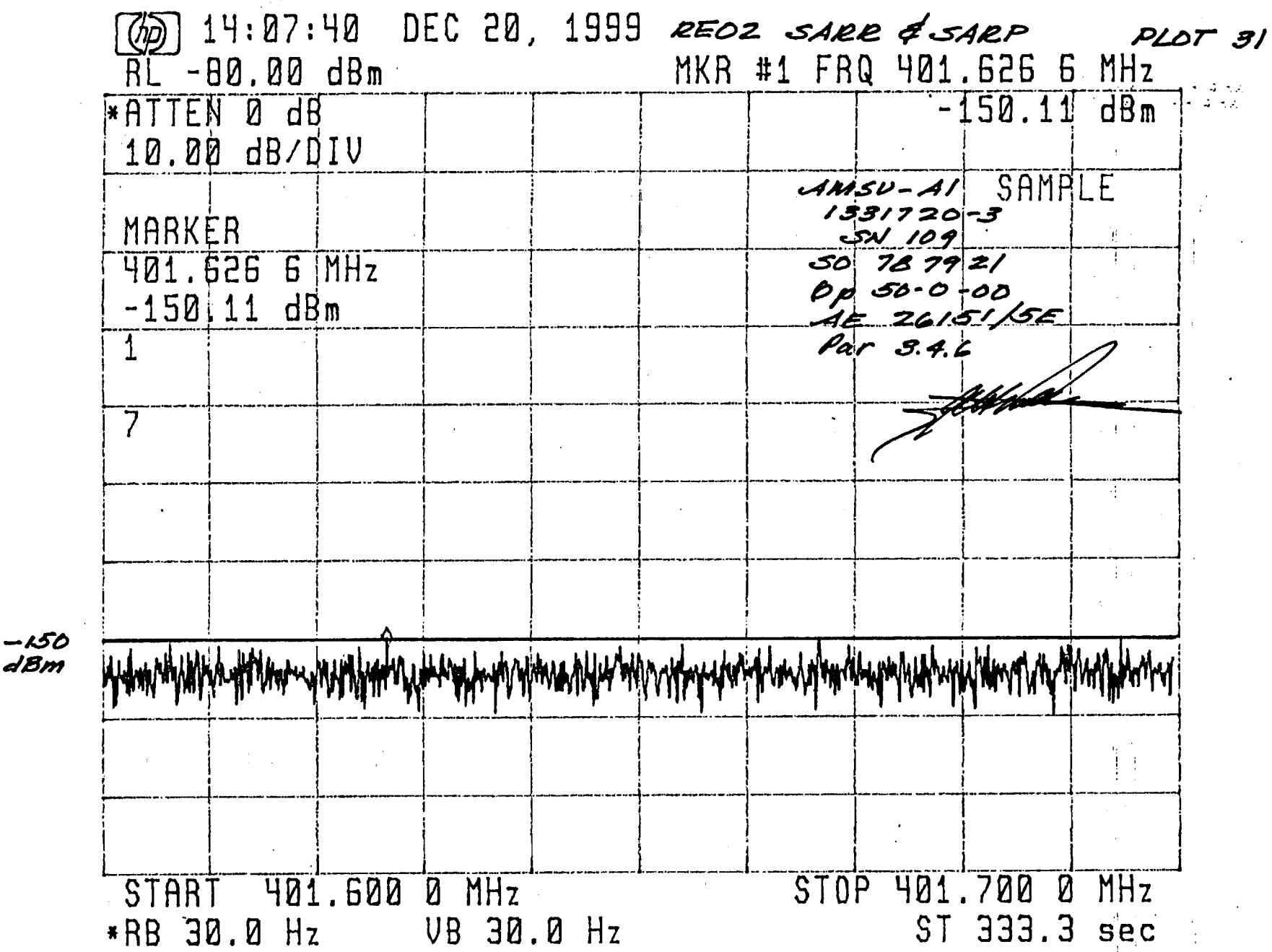

12:14:37 DEC 20, 1999 RE02 SARR & SARP PLOT 26
RL -80.00 dBm
MKR #1 FRQ 406.145 3 MHz
*ATTEN 0 dB
-147.08 dBm
10.00 dB/DIV
AMSU-A1 SAMPLE
1381720-3
SN 109
MARKER
406.145 3 MHz
-147.08 dBm
50 78 79 21
Op 50-0-00
1E 26161/5E
Par 8.4.6
1
3
-145 dBm
START 406.100 0 MHz
STOP 406.200 0 MHz
*RB 30.0 Hz
VB 30.0 Hz
ST 333.3 sec

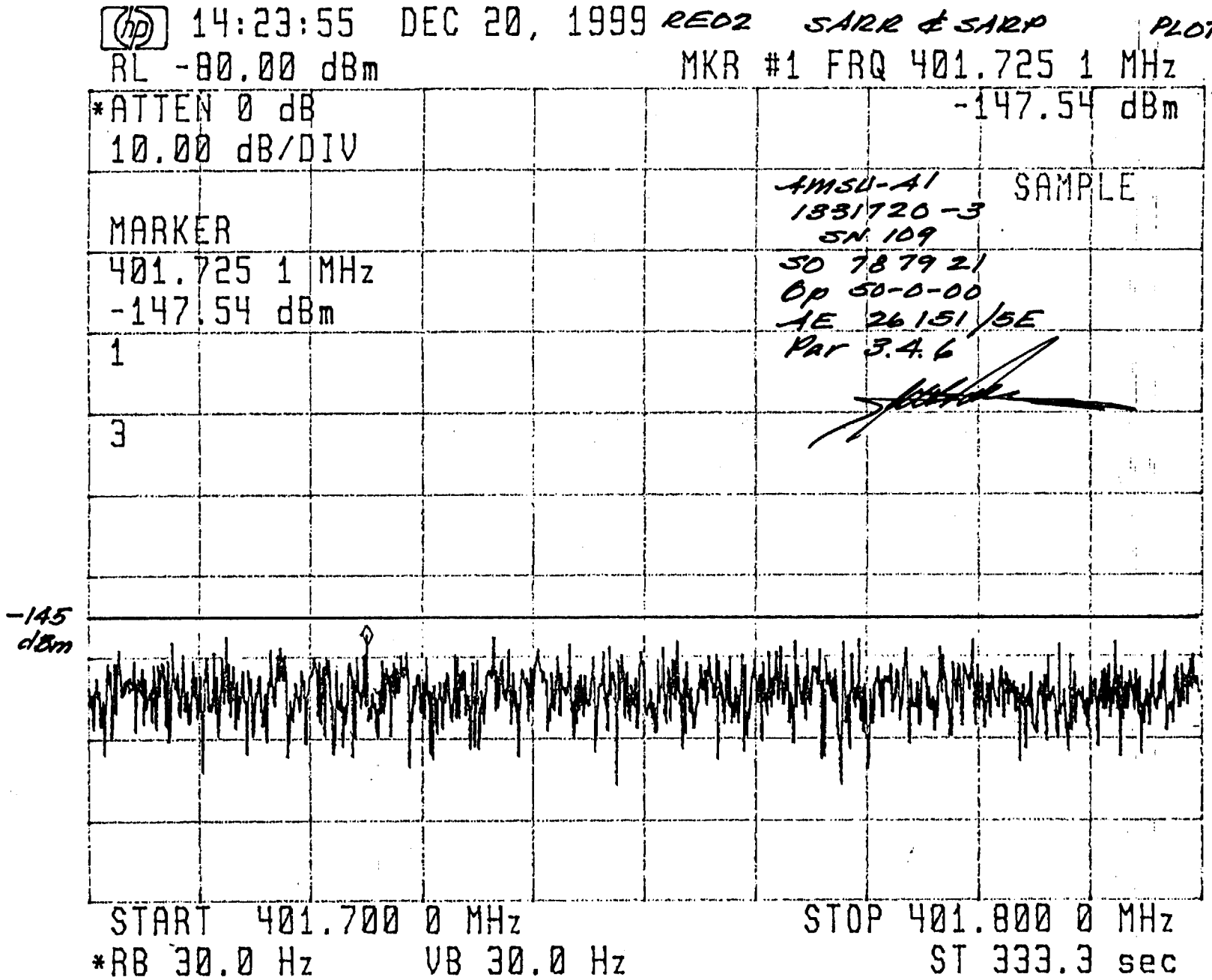

12:22:12 DEC 20, 1999 REO2 SARR & SARP PLOT 27
RL -80.00 dBm
MKR #1 FRQ 409.992 MHz
*ATTEN 0 dB
10.00 dB/DIV
-125.16 dBm
AMSU-A1 SAMPLE
1331720-3
SN 109
50 78 79 21
Op 50-0-00
AE 26151/SE
Par 3.4.6
MARKER
409.992 MHz
-125.16 dBm
1
8
-125 dBm
START 406.200 MHz
STOP 411.000 MHz
*RB 1.00 kHz
VB 1.00 kHz
ST 14.40 sec

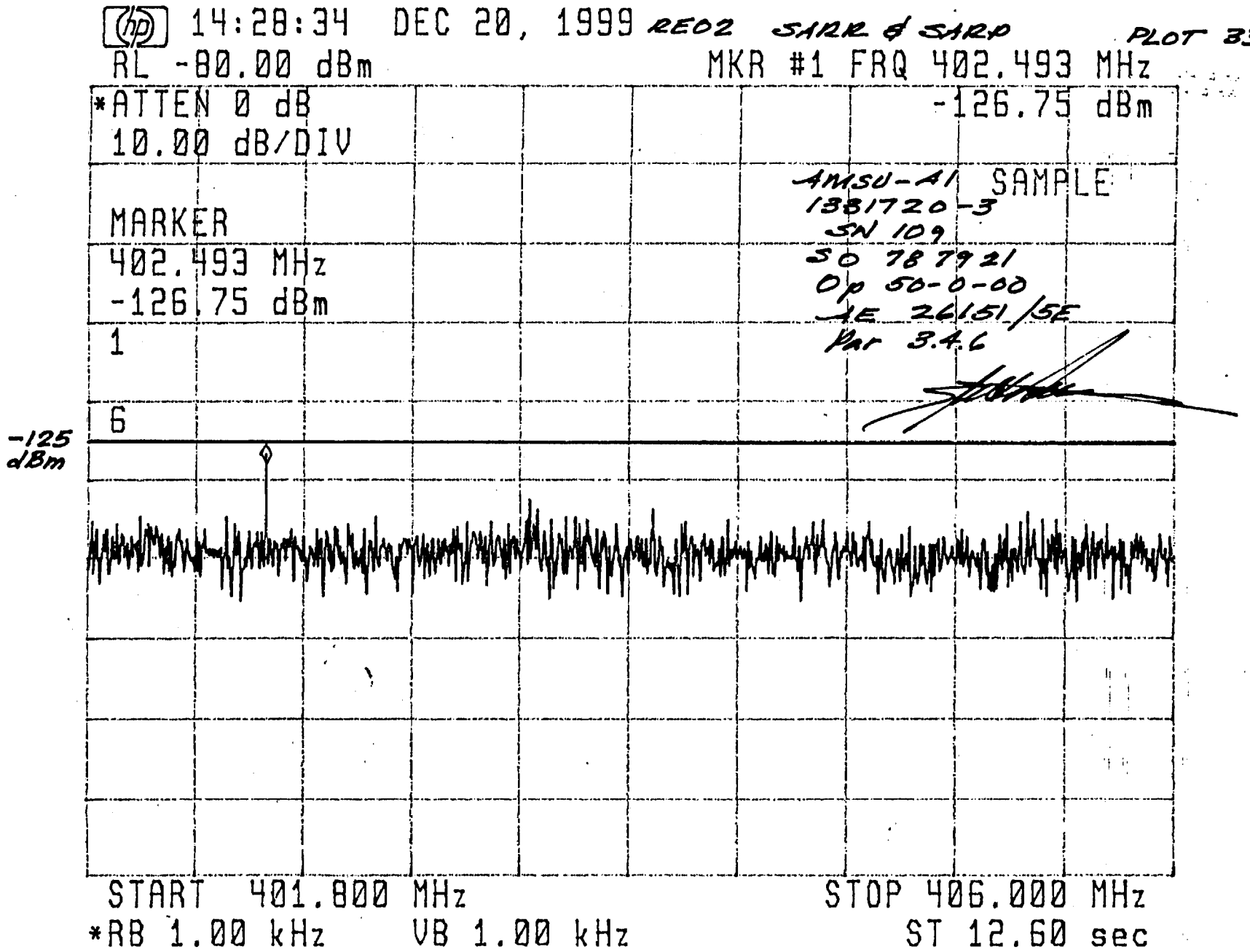

12:33:06 DEC 20, 1999 REOZ SARR & SARP PLOT 28
RL -40.00 dBm
MKR #1 FRQ 422.50 MHz
*ATTEN 0 dB
10.00 dB/DIV
-122.74 dBm
AMSU-A1 SAMPLE
1331720-5
SN 109
50 78 79 21
Op 50-0-00
JE 26151/5E
Par 3.4.6
MARKER
422.50 MHz
-122.74 dBm
1
8
-100 dBm
START 411.00 MHz
STOP 425.00 MHz
*RB 30.0 kHz
VB 30.0 kHz
ST 46.64 msec

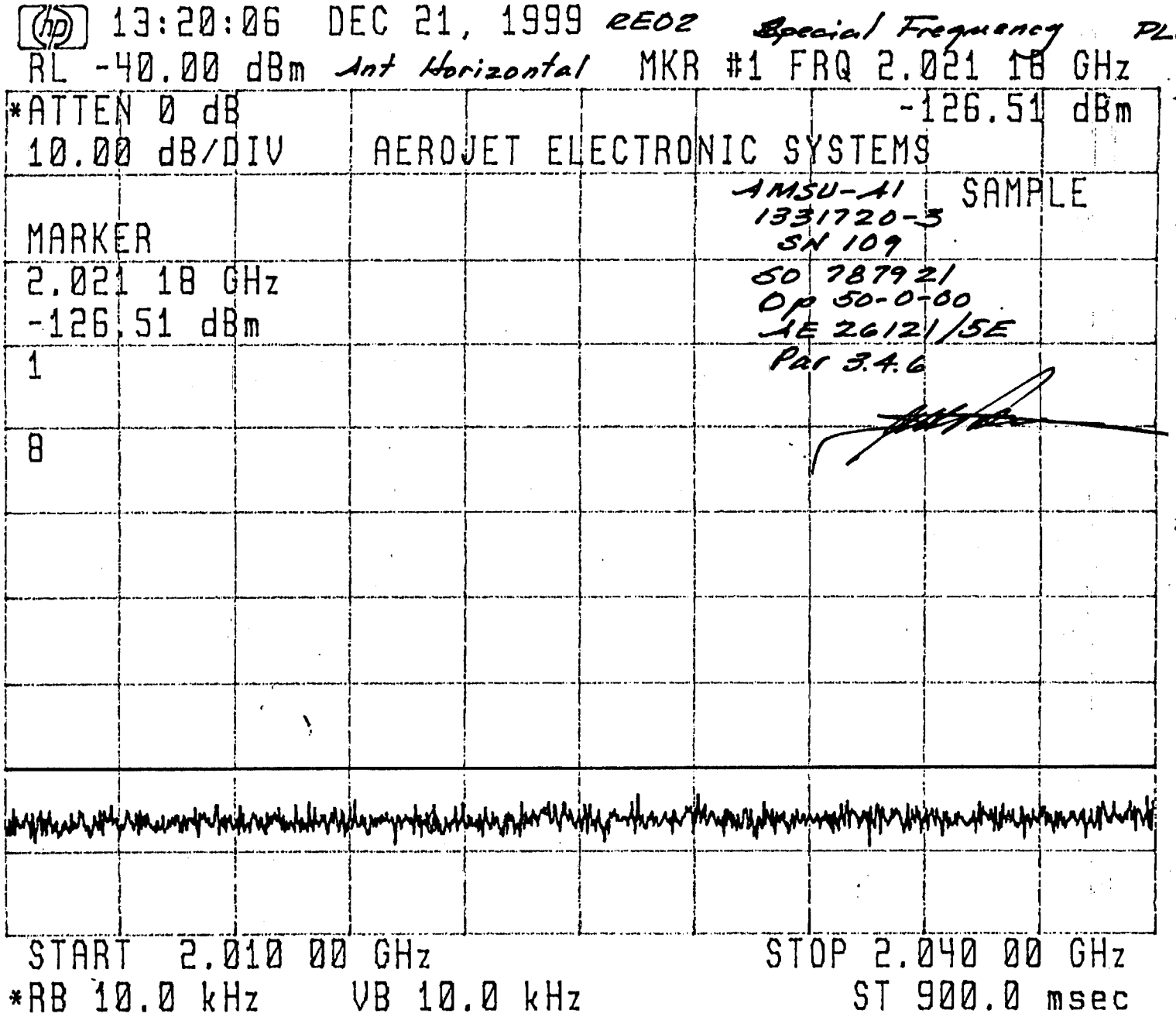

14:37:41 DEC 20, 1999 REO2
SARR & SARP
PLOT 29
RL -80.00 dBm
MKR #1 FRQ 399.994 MHz
*ATTEN 0 dB
10.00 dB/DIV
-128.60 dBm
AMSU-A1 SAMPLE
1331720-3
SN 109
50 787921
6p 50-0-00
AE 26161/6E
Par 3.4.6
MARKER
399.994 MHz
-128.60 dBm
1
8
-125 dBm
START 396.000 MHz
STOP 401.500 MHz
*RB 3.00 kHz
VB 3.00 kHz
ST 1.833 sec

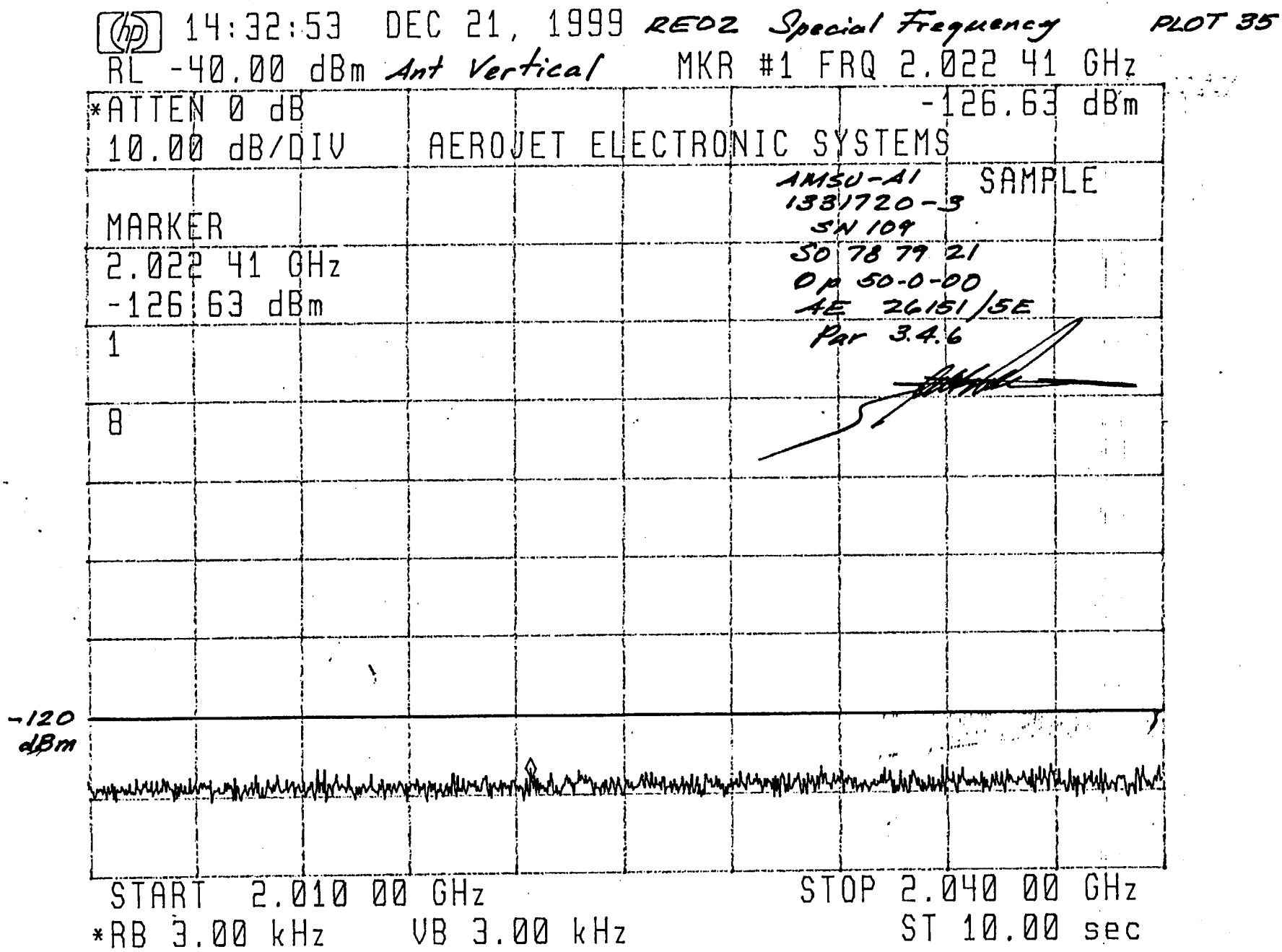

13:24:01 DEC 20, 1999 RE02 SARR & SARP PLOT 30
RL -80.00 dBm
MKR #1 FRQ 401.585 0 MHz
*ATTEN 0 dB
-148.96 dBm
10.00 dB/DIV
AMSU-A1 SAMPLE
1331720-3
SN 109
MARKER
401.585 0 MHz
-148.96 dBm
50 78 79 21
Op 50-0-00
JE 26151/5E
Par 3.4.6
1
5
-145 dBm
START 401.500 0 MHz
STOP 401.600 0 MHz
*RB 30.0 Hz
VB 30.0 Hz
ST 333.3 sec

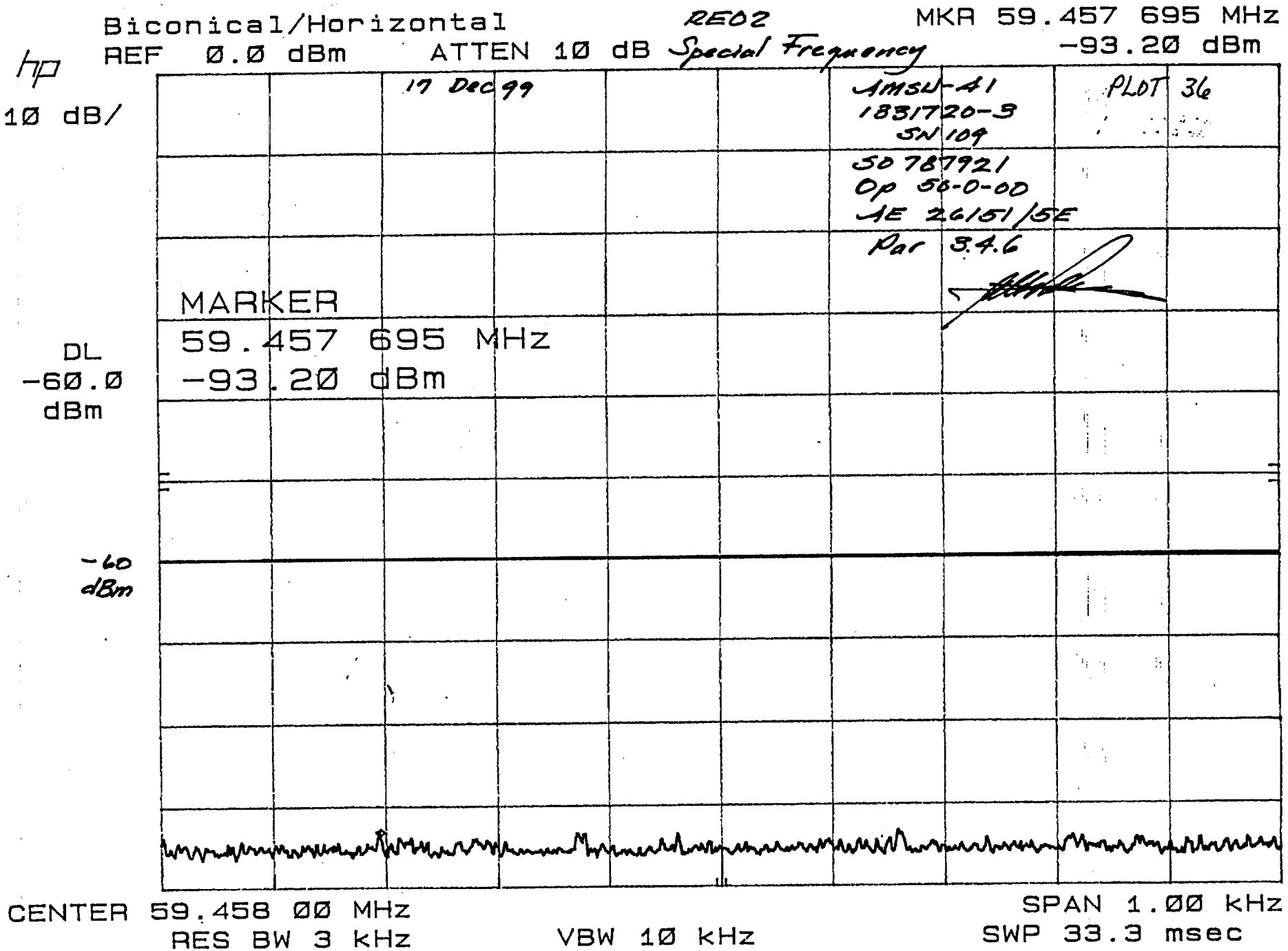

14:07:40 DEC 20, 1999 RE02 SARR & SARP PLOT 31
RL -80.00 dBm
MKR #1 FRQ 401.626 6 MHz
*ATTEN 0 dB
10.00 dB/DIV
-150.11 dBm
AMSU-A1 SAMPLE
1331720-3
SN 109
50 78 79 21
Op 50-0-00
AE 26151/5E
Par 3.4.6
MARKER
401.626 6 MHz
-150.11 dBm
1
7
-150 dBm
START 401.600 0 MHz
STOP 401.700 0 MHz
*RB 30.0 Hz
VB 30.0 Hz
ST 333.3 sec

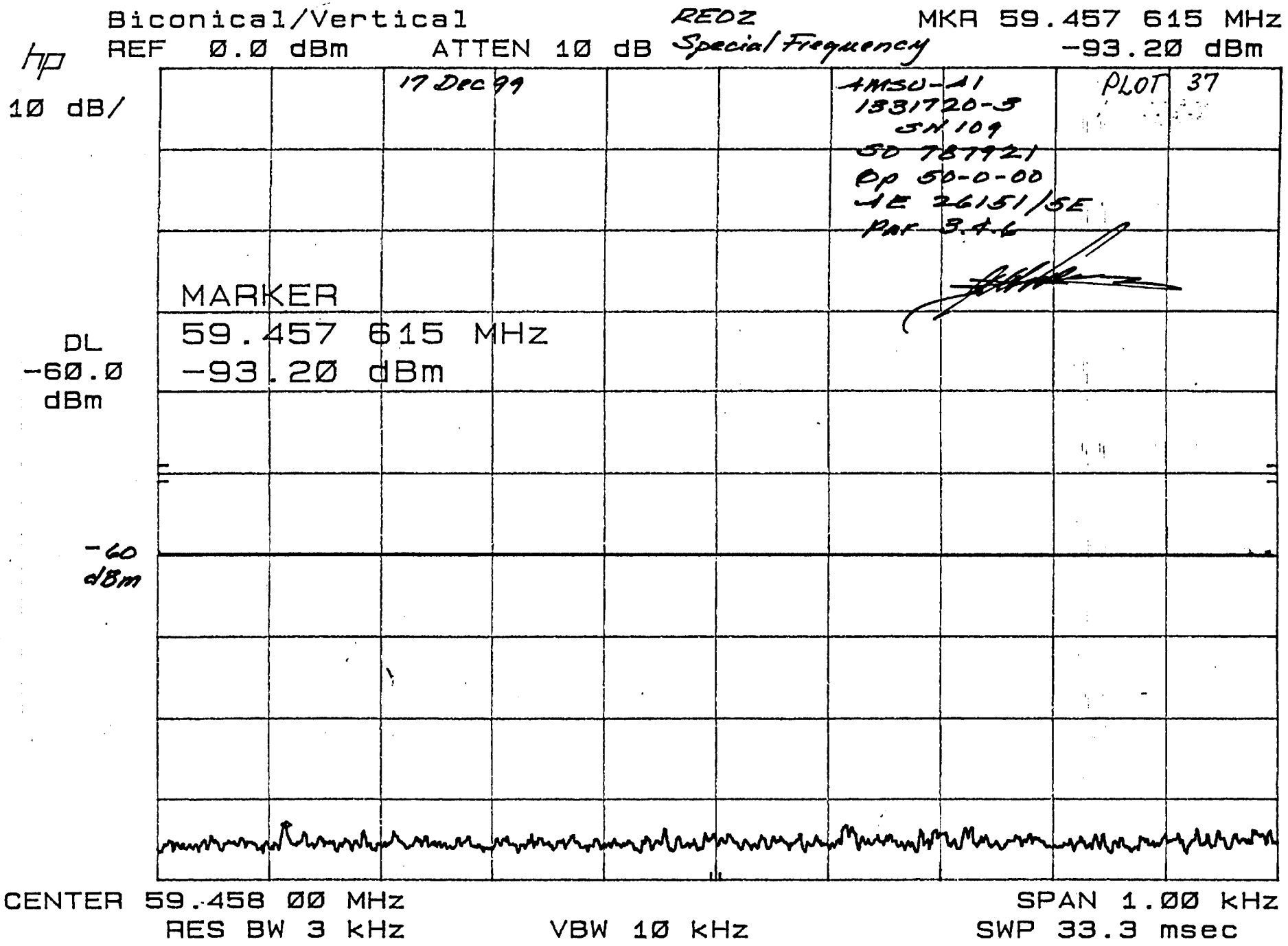

14:23:55 DEC 20, 1999 REQ2 SAR & SARP PLOT 32
RL -80.00 dBm
MKR #1 FRQ 401.725 1 MHz
*ATTEN 0 dB
10.00 dB/DIV
-147.54 dBm
AMSU-A1
1331720-3
SN 109
SAMPLE
50 7879 21
Op 50-0-00
1E 26151/5E
Par 3.4.6
MARKER
401.725 1 MHz
-147.54 dBm
1
3
-145 dBm
START 401.700 0 MHz
STOP 401.800 0 MHz
*RB 30.0 Hz
VB 30.0 Hz
ST 333.3 sec

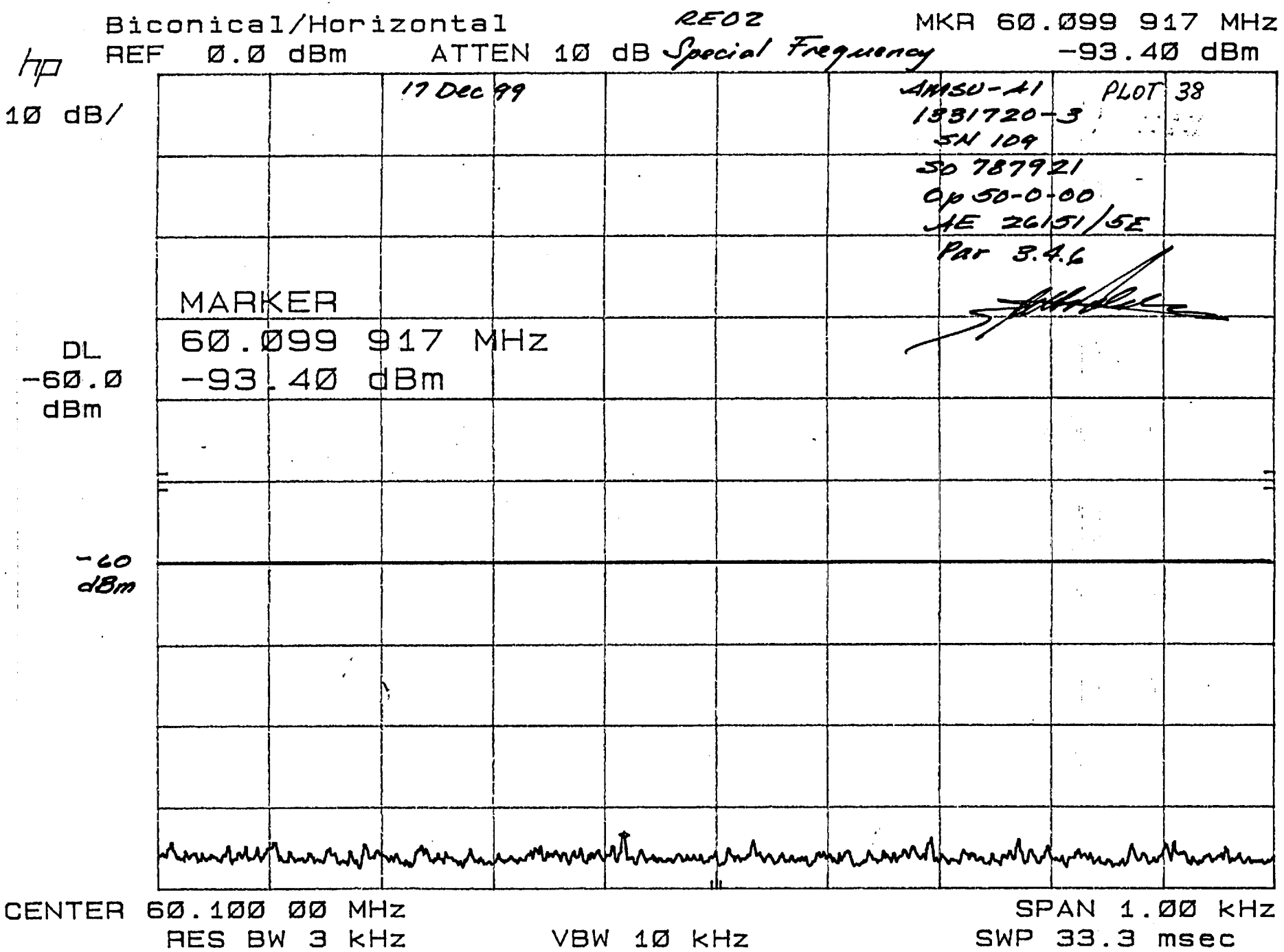

14:28:34 DEC 20, 1999 RE02 SARR & SARP PLOT 33
RL -80.00 dBm
MKR #1 FRQ 402.493 MHz
*ATTEN 0 dB
-126.75 dBm
10.00 dB/DIV
AMSU-A1 SAMPLE
1331720-3
SN 109
SO 78792I
Op 50-0-00
IE 26151/SE
Par 3.4.6
MARKER
402.493 MHz
-126.75 dBm
1
6
-125 dBm
START 401.800 MHz
STOP 406.000 MHz
*RB 1.00 kHz
VB 1.00 kHz
ST 12.60 sec


13:20:06 DEC 21, 1999 EE02 Special Frequency PLOT 34
RL -40.00 dBm Ant Horizontal MKR #1 FRQ 2.021 18 GHz
*ATTEN 0 dB
-126.51 dBm
10.00 dB/DIV
AEROJET ELECTRONIC SYSTEMS
AMSU-A1 SAMPLE
1331720-3
SN 109
50 787921
Op 50-0-00
AE 26121/5E
Par 3.4.6
MARKER
2.021 18 GHz
-126.51 dBm
1
8
-120 dBm
START 2.010 00 GHz
STOP 2.040 00 GHz
*RB 10.0 kHz
VB 10.0 kHz
ST 900.0 msec

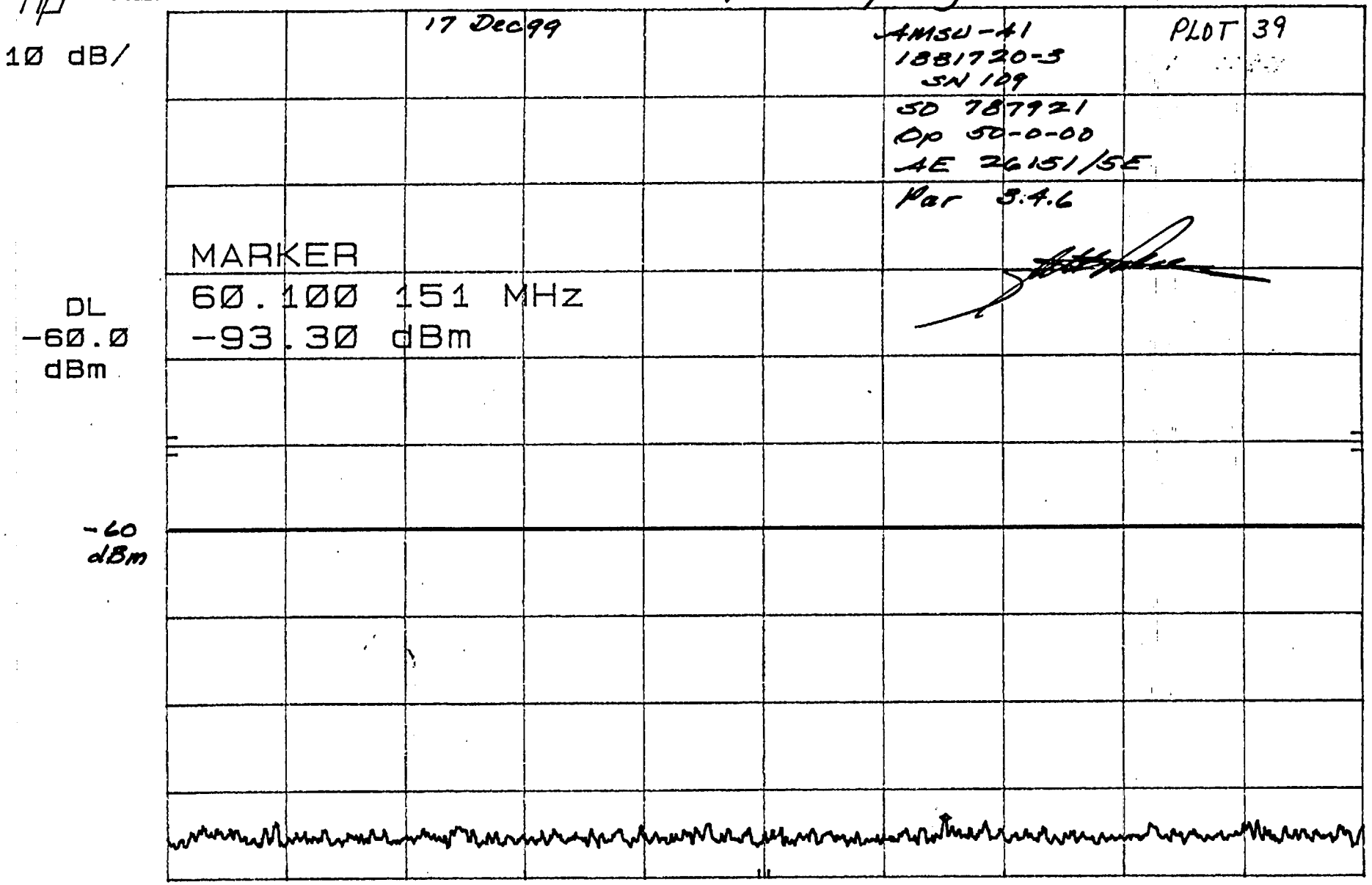

14:32:53 DEC 21, 1999 RE02 Special Frequency
PLOT 35
RL -40.00 dBm Ant Vertical
MKR #1 FRQ 2.022 41 GHz
*ATTEN 0 dB
-126.63 dBm
10.00 dB/DIV
AEROJET ELECTRONIC SYSTEMS
AMSU-A1 SAMPLE
1331720-3
SN 109
50 78 79 21
Op 50-0-00
4E 26151/5E
Par 3.4.6
MARKER
2.022 41 GHz
-126.63 dBm
1
8
-120 dBm
START 2.010 00 GHz
STOP 2.040 00 GHz
*RB 3.00 kHz
VB 3.00 kHz
ST 10.00 sec


Biconical/Horizontal
REF 0.0 dBm
ATTEN 10 dB
RE02
Special Frequency
MKR 59.457 695 MHz
-93.20 dBm
17 Dec 99
AMSU-A1
1831720-3
SN 109
50787921
Op 56-0-00
AE 26151/5E
Par 3.4.6
PLOT 36
10 dB/
MARKER
59.457 695 MHz
-93.20 dBm
DL
-60.0 dBm
-60 dBm
CENTER 59.458 00 MHz
RES BW 3 kHz
VBW 10 kHz
SPAN 1.00 kHz
SWP 33.3 msec

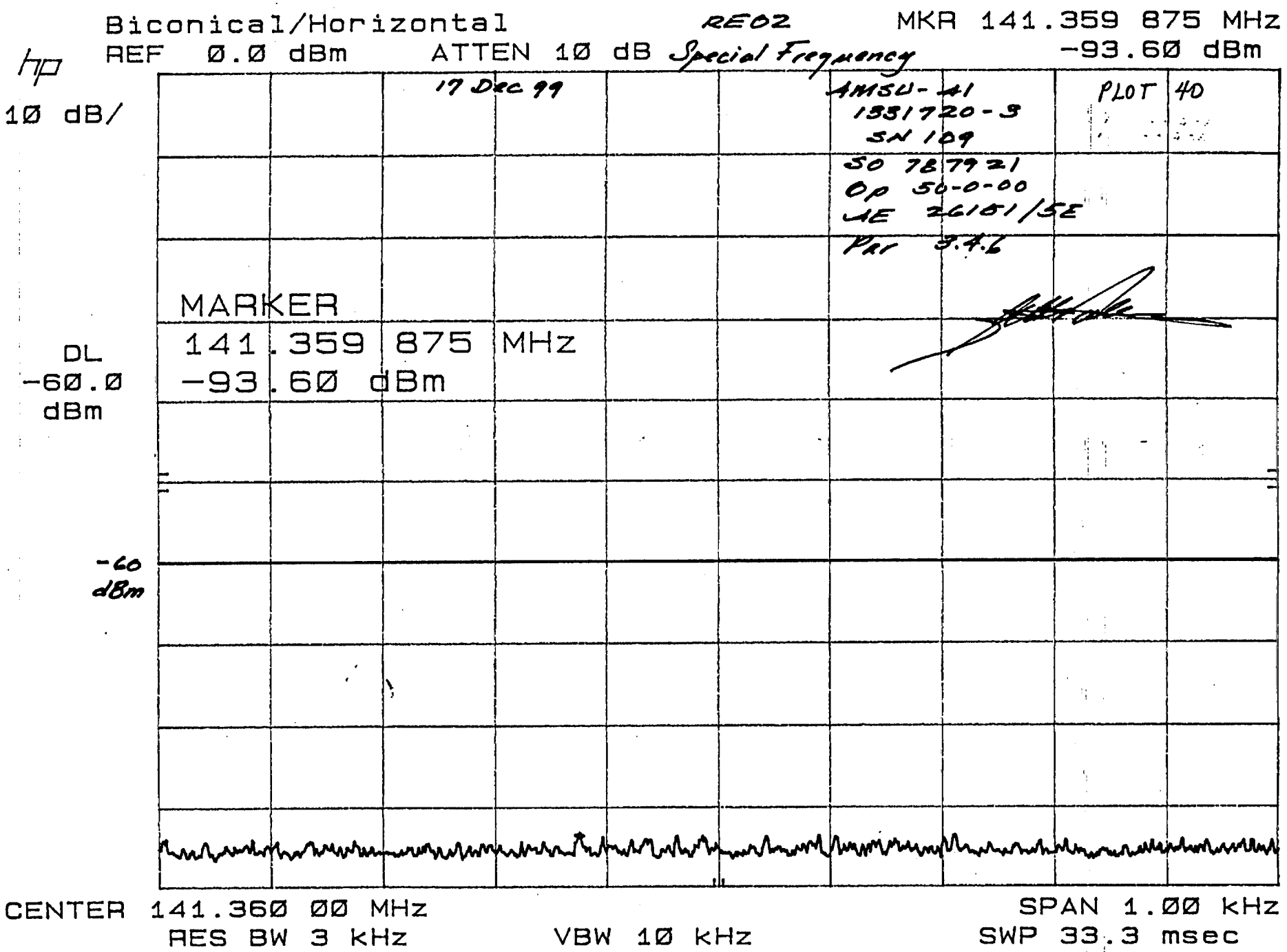

Biconical/Vertical
REF 0.0 dBm
ATTEN 10 dB
REOZ
Special Frequency
MKR 59.457 615 MHz
-93.20 dBm
hp
10 dB/
17 Dec 99
AMSU-A1
1331720-3
SN 109
SO 787921
Op 50-0-00
AE 26151/5E
Par 3.4.6
PLOT 37
MARKER
59.457 615 MHz
-93.20 dBm
DL
-60.0 dBm
-60 dBm
CENTER 59.458 00 MHz
SPAN 1.00 kHz
RES BW 3 kHz
VBW 10 kHz
SWP 33.3 msec

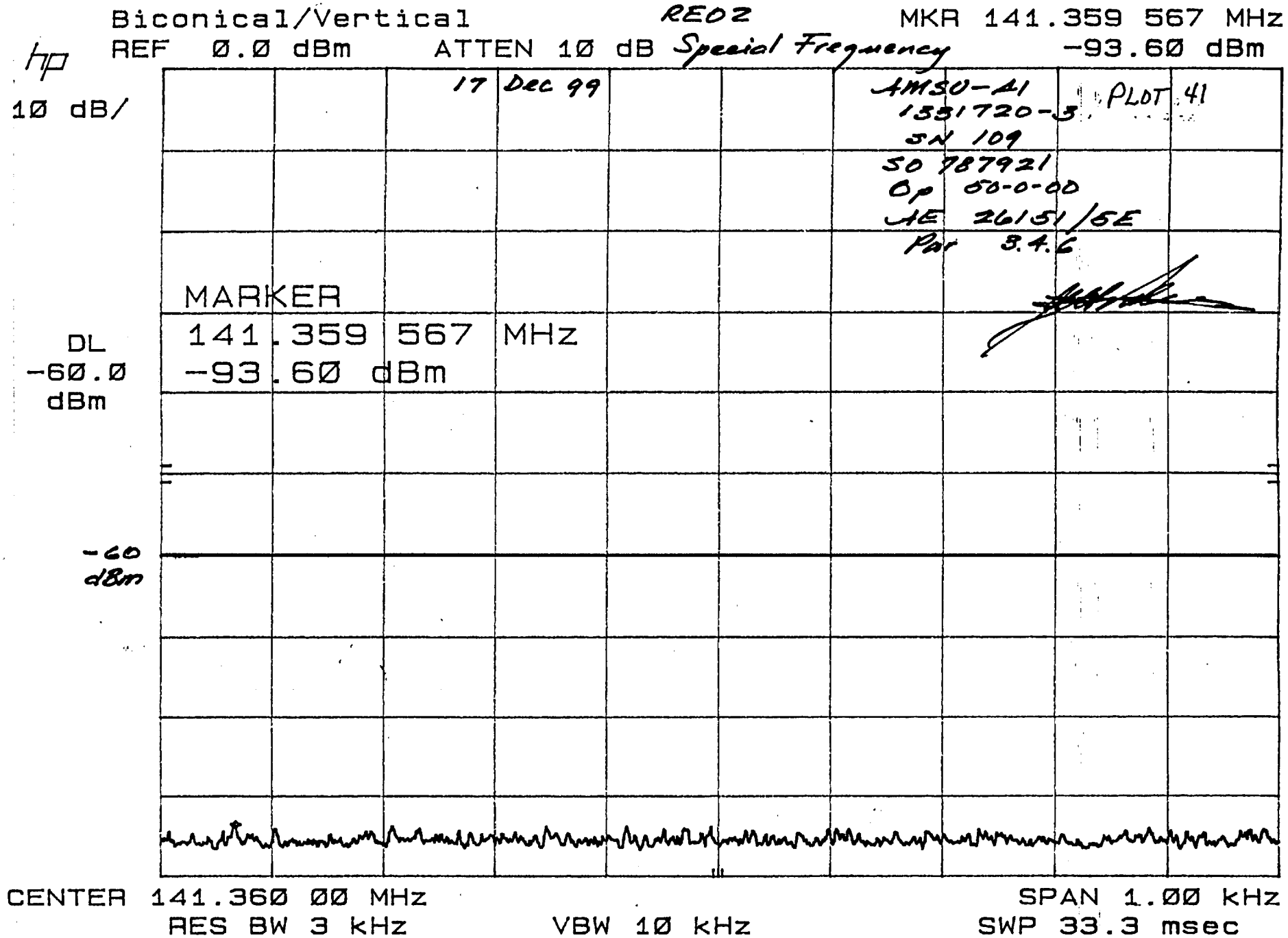

Biconical/Horizontal
REF 0.0 dBm
ATTEN 10 dB
RE02
Special Frequency
MKR 60.099 917 MHz
-93.40 dBm
17 Dec 99
ANSO-41
1331720-3
SN 109
SO 787921
Op 50-0-00
AE 26151/5E
Par 5.4.6
PLOT 38
10 dB/
MARKER
60.099 917 MHz
-93.40 dBm
DL
-60.0
dBm
-60
dBm
CENTER 60.100 00 MHz
RES BW 3 kHz
VBW 10 kHz
SPAN 1.00 kHz
SWP 33.3 msec

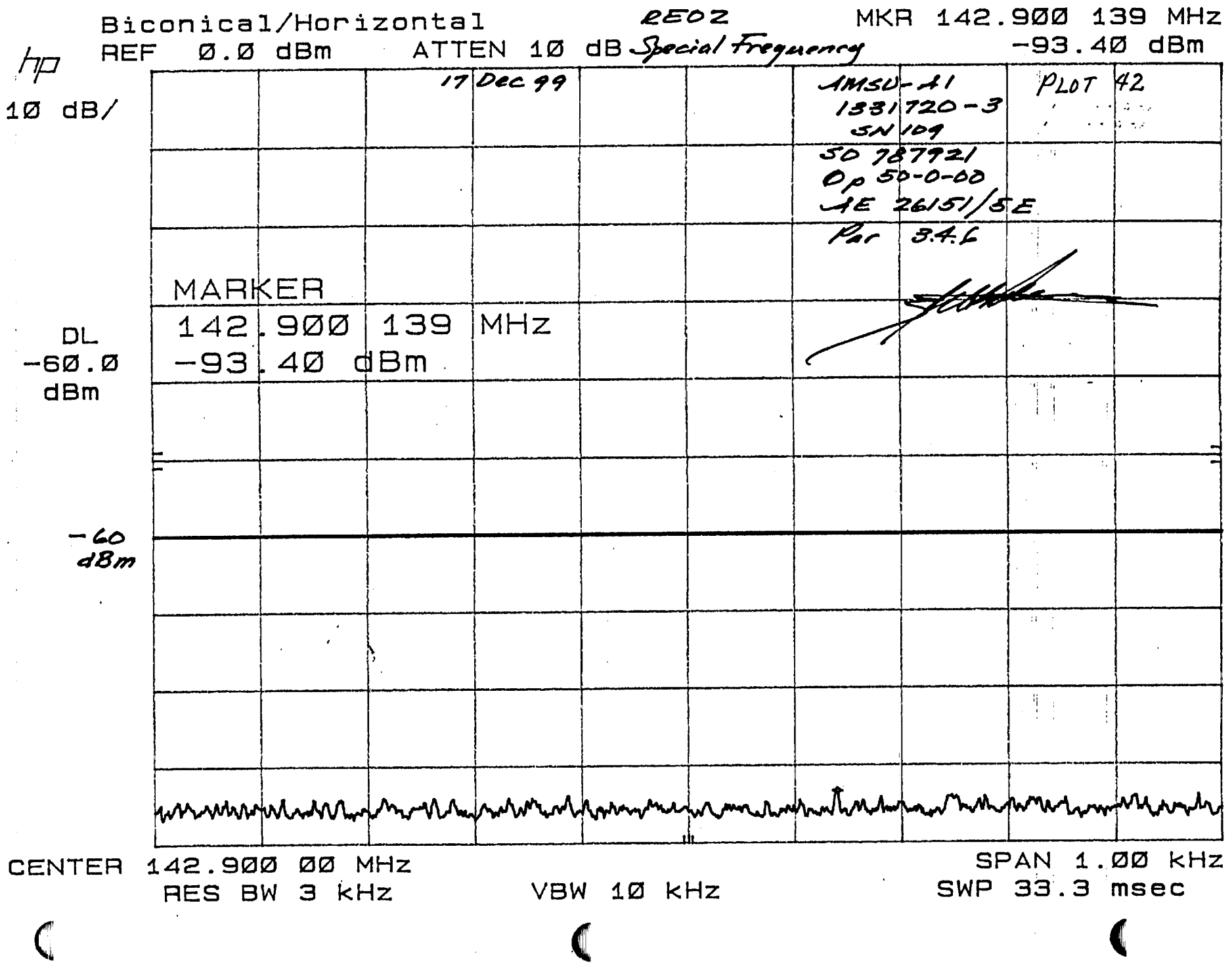
Biconical/Vertical RE02 MKR 60.100 151 MHz
REF 0.0 dBm ATTEN 10 dB Special Frequency -93.30 dBm

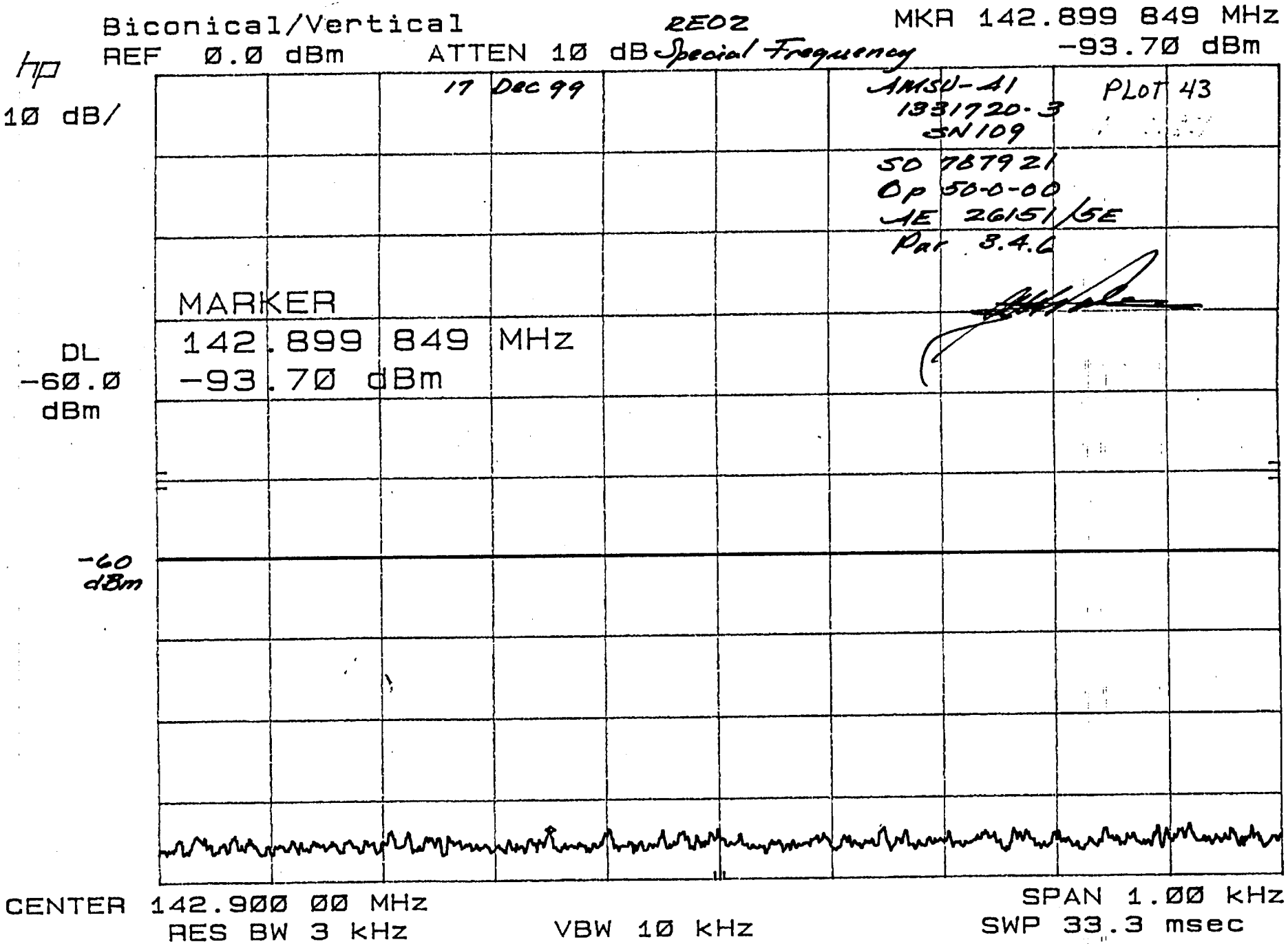


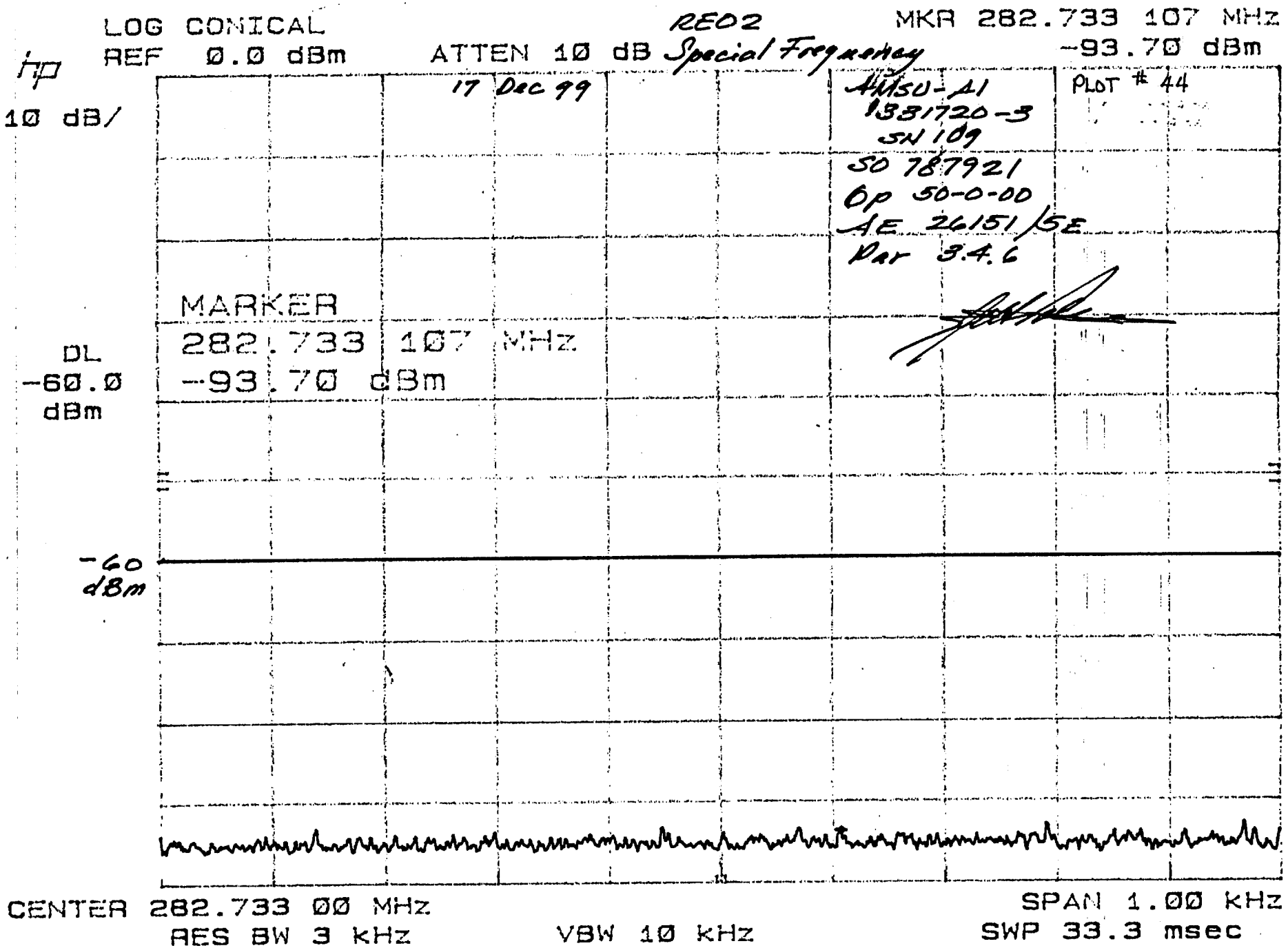
CENTER 60.100 00 MHz SPAN 1.00 kHz
RES BW 3 kHz VBW 10 kHz SWP 33.3 msec

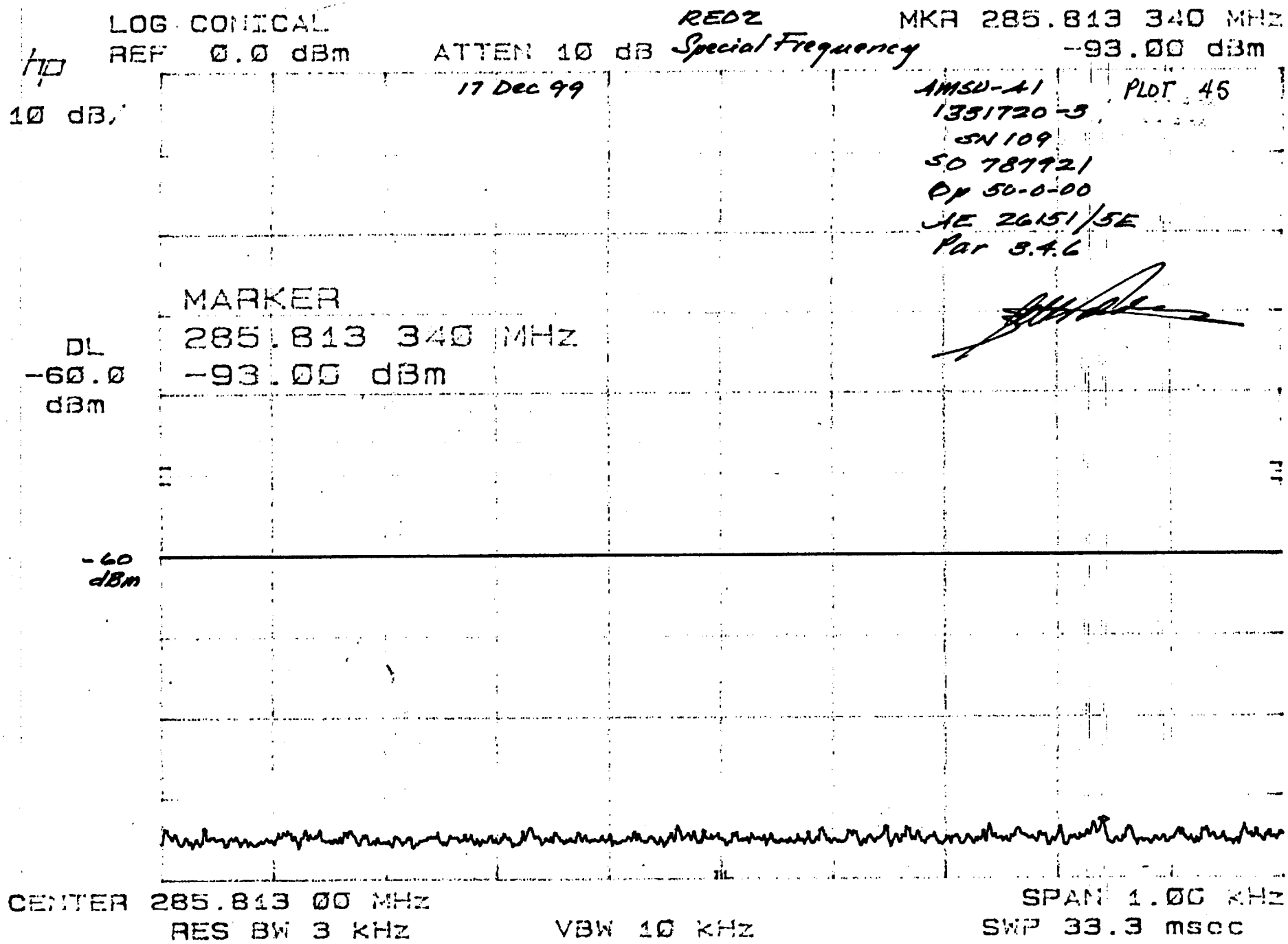

Biconical/Horizontal
REF 0.0 dBm
ATTEN 10 dB
Special Frequency
MKR 141.359 875 MHz
-93.60 dBm
10 dB/
17 Dec 99
AMSU-41
1331720-3
SN 109
50 78 79 21
Op 50-0-00
AE 2C101/5E
Par 3.4.6
PLOT 40
MARKER
141.359 875 MHz
-93.60 dBm
DL
-60.0 dBm
-60 dBm
CENTER 141.360 00 MHz
RES BW 3 kHz
VBW 10 kHz
SPAN 1.00 kHz
SWP 33.3 msec

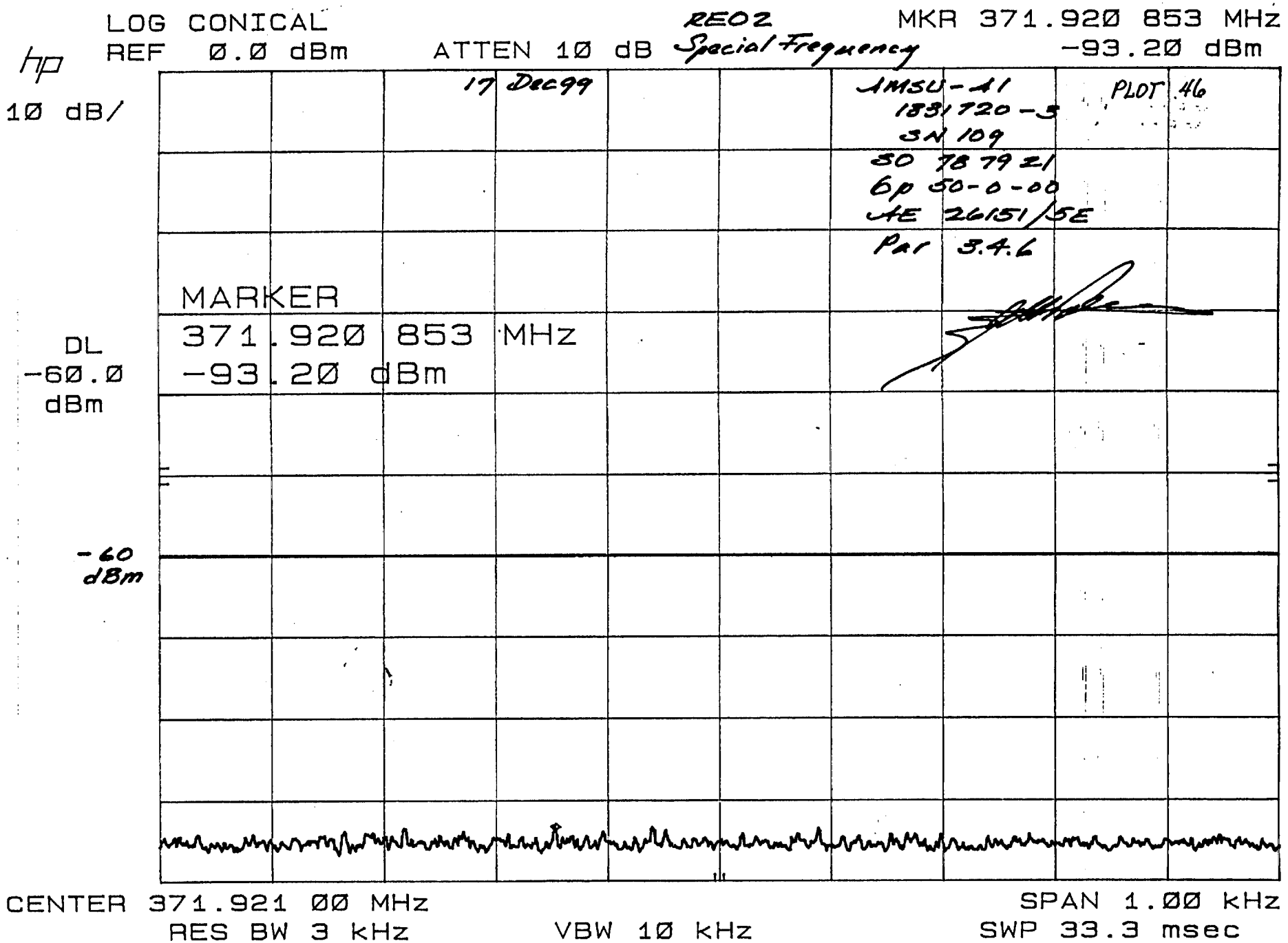

Biconical/Vertical
RE02
MKR 141.359 567 MHz
REF 0.0 dBm
ATTEN 10 dB
Special Frequency
-93.60 dBm
hp
17 Dec 99
AMSO-41
1331720-3
SN 109
PLOT 41
SO 787921
Op 00-0-00
AE 26151/5E
Par 3.4.6
10 dB/
MARKER
141.359 567 MHz
-93.60 dBm
DL
-60.0 dBm
-60 dBm
CENTER 141.360 00 MHz
SPAN 1.00 kHz
RES BW 3 kHz
VBW 10 kHz
SWP 33.3 msec

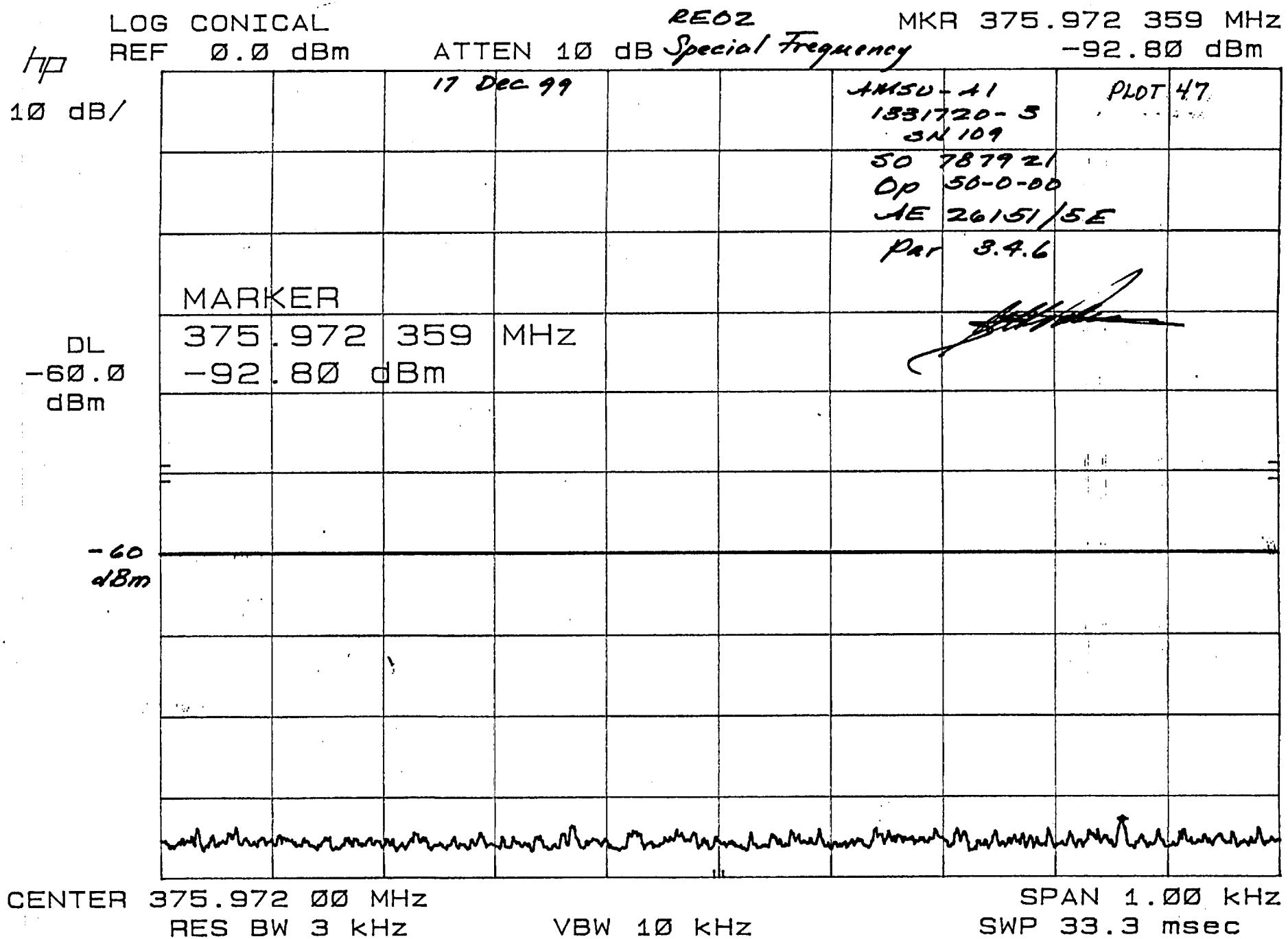

Biconical/Horizontal
REF 0.0 dBm
ATTEN 10 dB
2E02
Special Frequency
MKR 142.900 139 MHz
-93.40 dBm
hp
10 dB/
17 Dec 99
AMSU-A1
1331720-3
SN 109
50 787921
Op 50-0-00
4E 26151/5E
PLOT 42
Par 3.4.6
MARKER
142.900 139 MHz
-93.40 dBm
DL
-60.0 dBm
-60 dBm
CENTER 142.900 00 MHz
RES BW 3 kHz
VBW 10 kHz
SPAN 1.00 kHz
SWP 33.3 msec

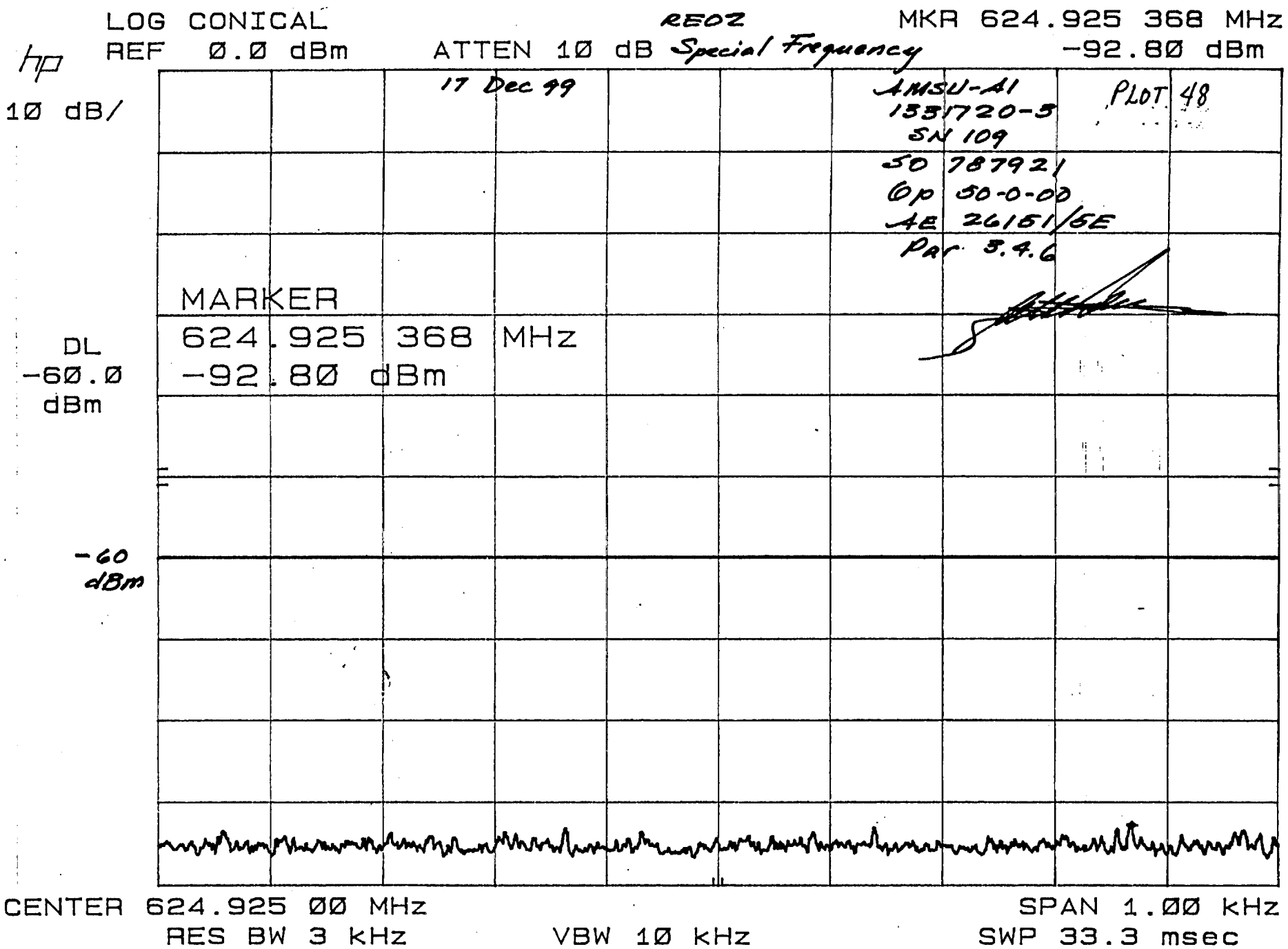

Biconical/Vertical
2E02
MKR 142.899 849 MHz
REF 0.0 dBm
ATTEN 10 dB
Special Frequency
-93.70 dBm
hp
17 Dec 99
AMSU-A1
1331720-3
SN109
PLOT 43
SO 787921
Op 50-0-00
AE 26151/GE
Par 3.4.6
10 dB/
MARKER
142.899 849 MHz
-93.70 dBm
DL
-60.0 dBm
-60 dBm
CENTER 142.900 00 MHz
RES BW 3 kHz
VBW 10 kHz
SPAN 1.00 kHz
SWP 33.3 msec

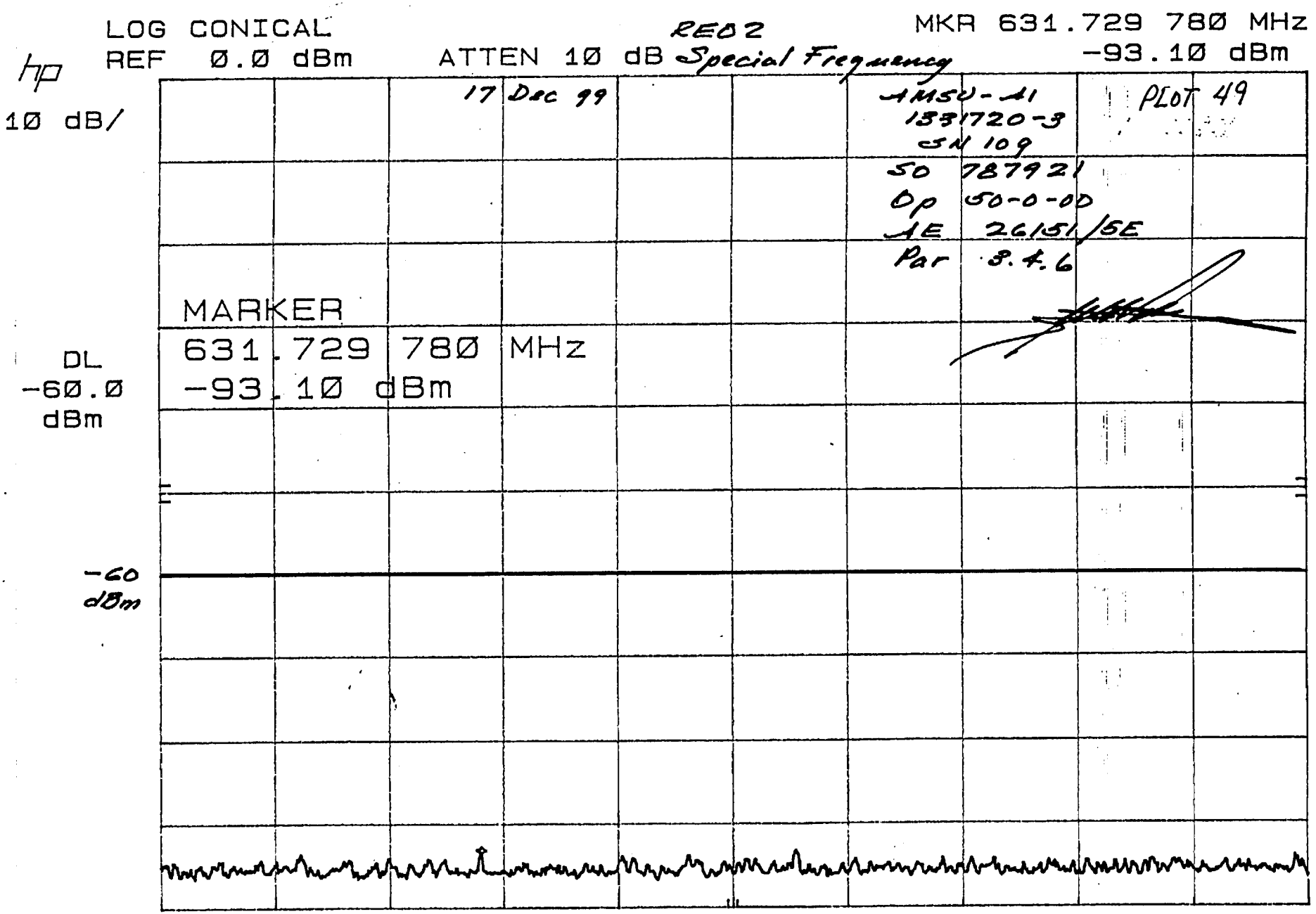

LOG CONICAL
REF 0.0 dBm
RE02
ATTEN 10 dB Special Frequency
MKR 282.733 107 MHz
-93.70 dBm
hp
17 Dec 99
PLOT # 44
AM50-A1
1331720-3
SN 109
SO 787921
Op 50-0-00
AE 26151/SE
Par 3.4.6
10 dB/
MARKER
282.733 107 MHz
-93.70 dBm
DL
-60.0
dBm
-60
dBm
CENTER 282.733 00 MHz
RES BW 3 kHz
VBW 10 kHz
SPAN 1.00 kHz
SWP 33.3 msec

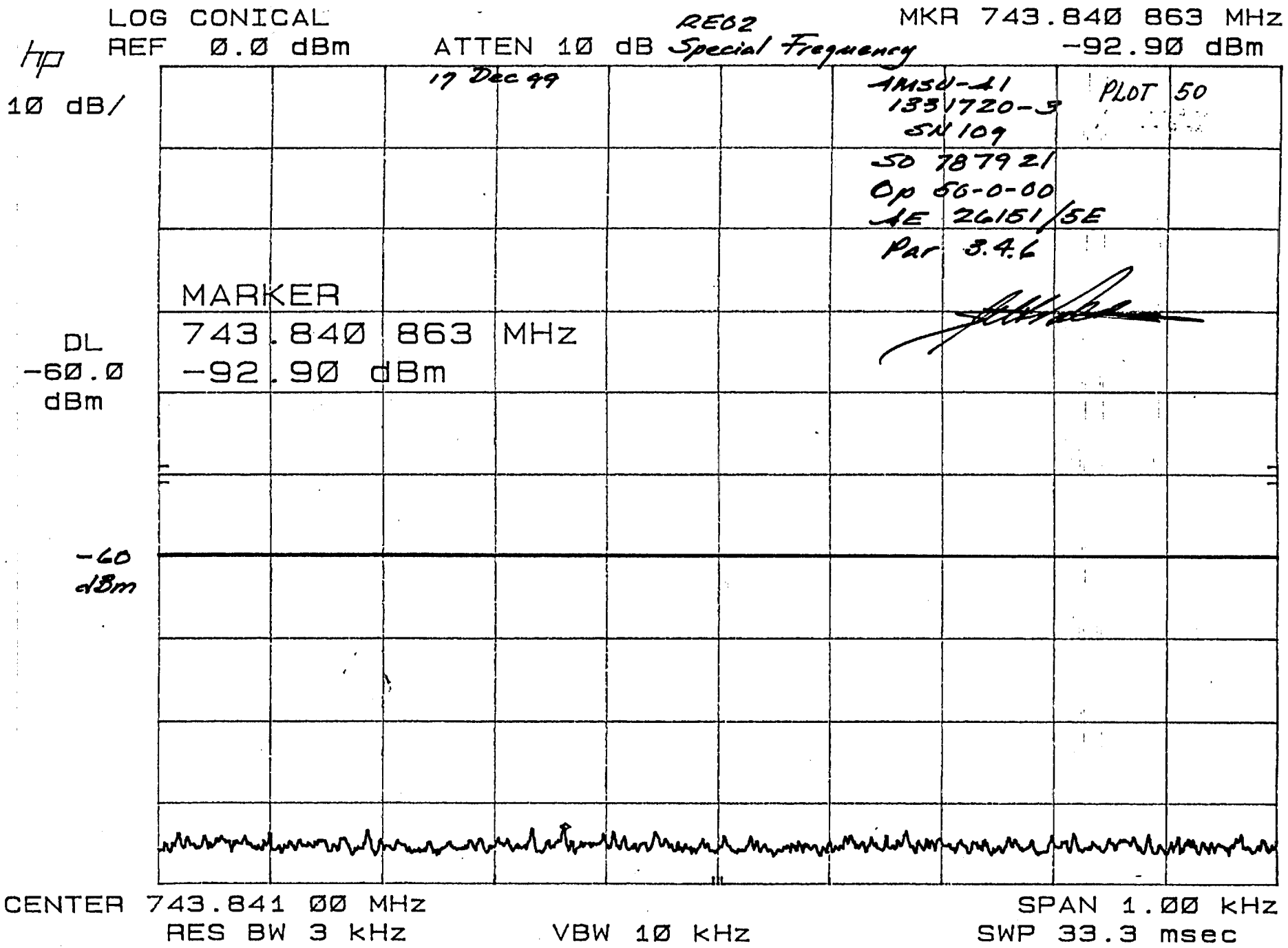

LOG CONICAL
REF 0.0 dBm
ATTEN 10 dB
REQ2
Special Frequency
MKR 285.813 340 MHz
-93.00 dBm
17 Dec 99
AMSU-A1
1331720-3
SN109
SO 787921
Op 50-0-00
AE 26151/5E
Par 3.4.6
PLOT 45
10 dB/
MARKER
285.813 340 MHz
-93.00 dBm
DL
-60.0
dBm
-60
dBm
CENTER 285.813 00 MHz
SPAN 1.00 kHz
RES BW 3 kHz
VBW 10 kHz
SWP 33.3 msec

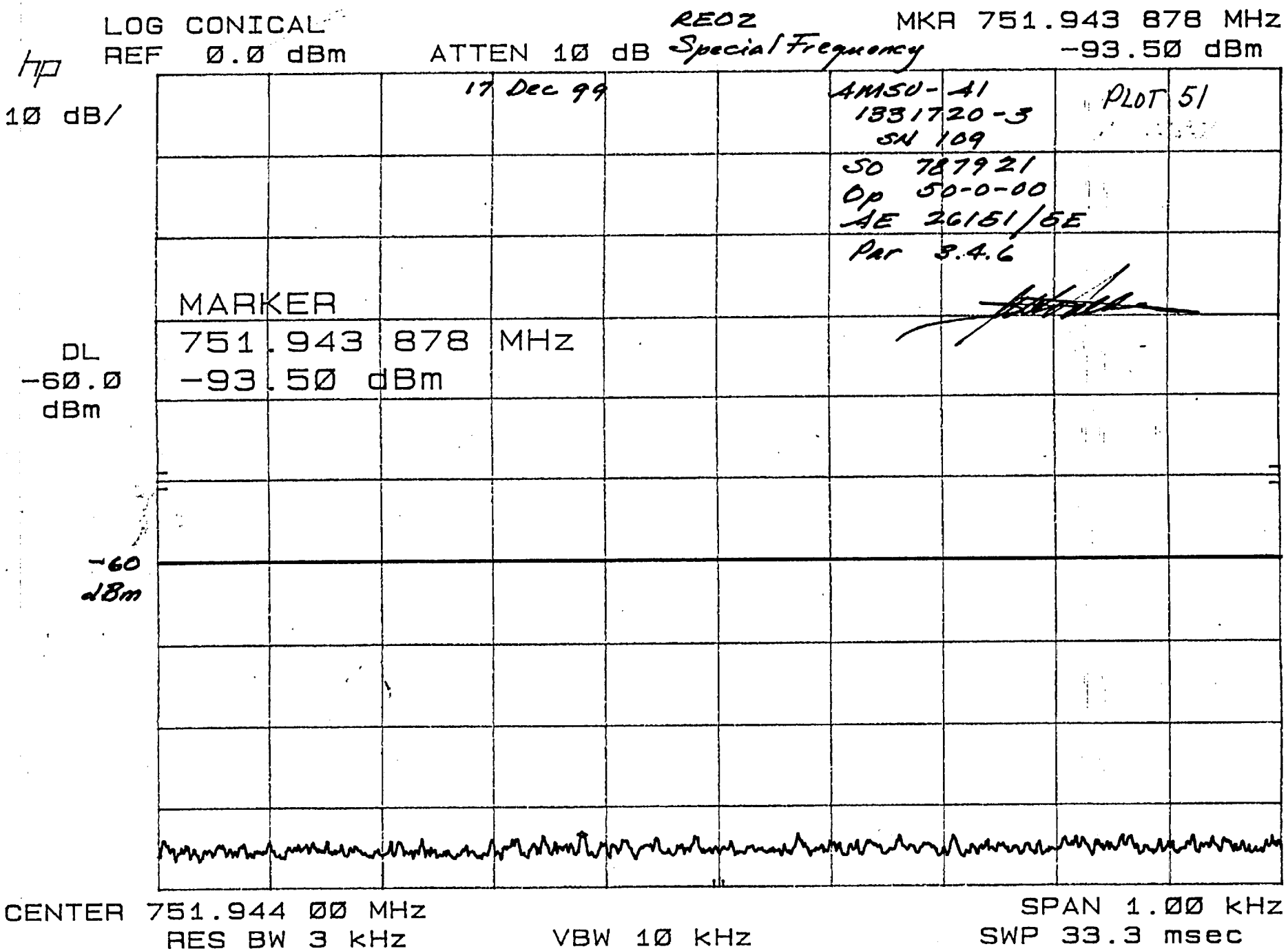

LOG CONICAL
REF 0.0 dBm
ATTEN 10 dB
RE02
Special Frequency
MKR 371.920 853 MHz
-93.20 dBm
hp
10 dB/
17 Dec99
AMSU-A1
1831720-3
SN 109
80 78 79 21
6p 50-0-00
AE 26151/5E
Par 3.4.6
PLOT 46
MARKER
371.920 853 MHz
-93.20 dBm
DL
-60.0 dBm
-60 dBm
CENTER 371.921 00 MHz
RES BW 3 kHz
VBW 10 kHz
SPAN 1.00 kHz
SWP 33.3 msec

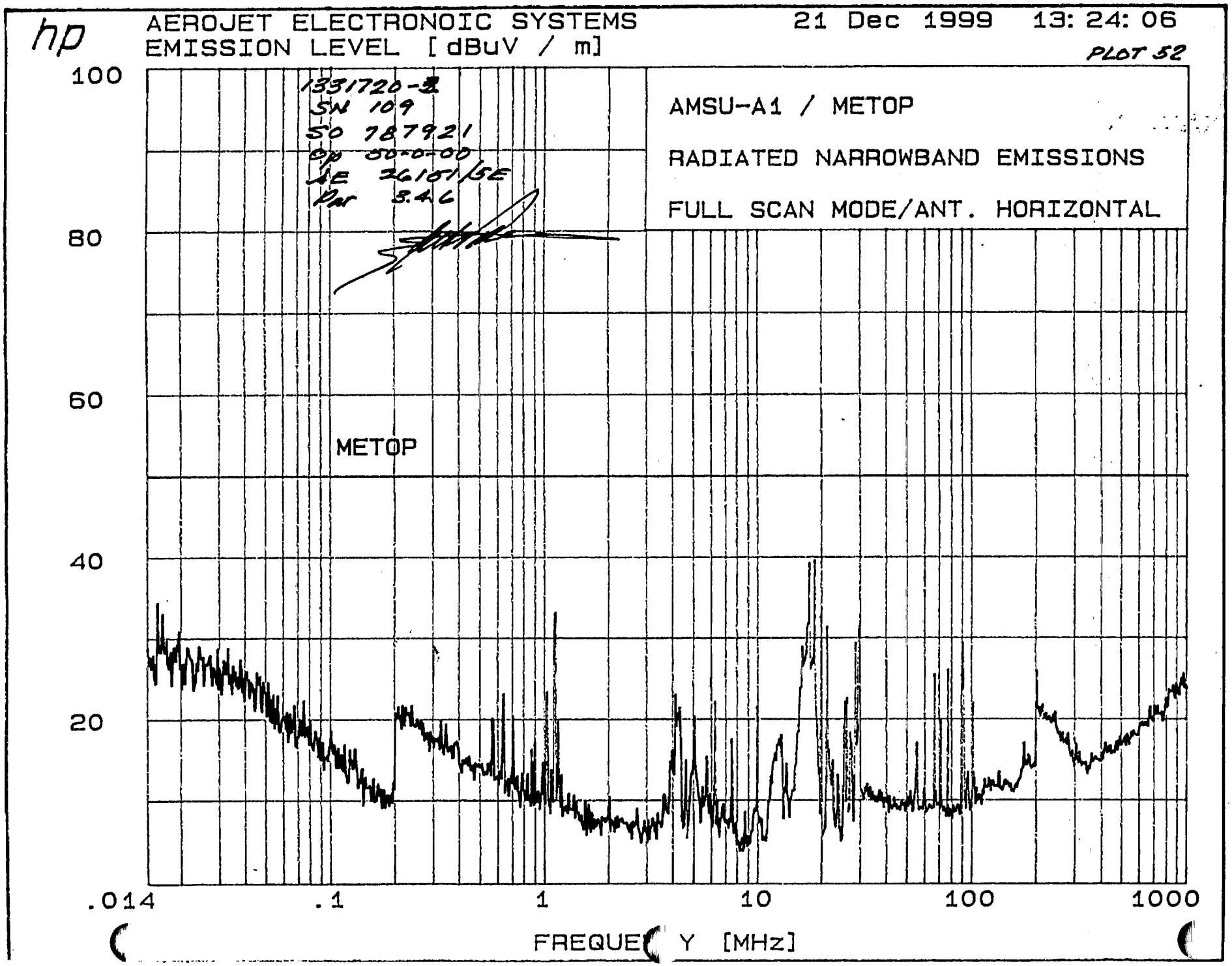

LOG CONICAL
REF 0.0 dBm
ATTEN 10 dB
REQ2
Special Frequency
MKR 375.972 359 MHz
-92.80 dBm
hp
10 dB/
17 Dec 99
AM50-41
1331720-3
SN 109
PLOT 47
50 787921
Op 50-0-00
AE 26151/5E
Par 3.4.6
MARKER
375.972 359 MHz
-92.80 dBm
DL
-60.0
dBm
-60
dBm
CENTER 375.972 00 MHz
SPAN 1.00 kHz
RES BW 3 kHz
VBW 10 kHz
SWP 33.3 msec

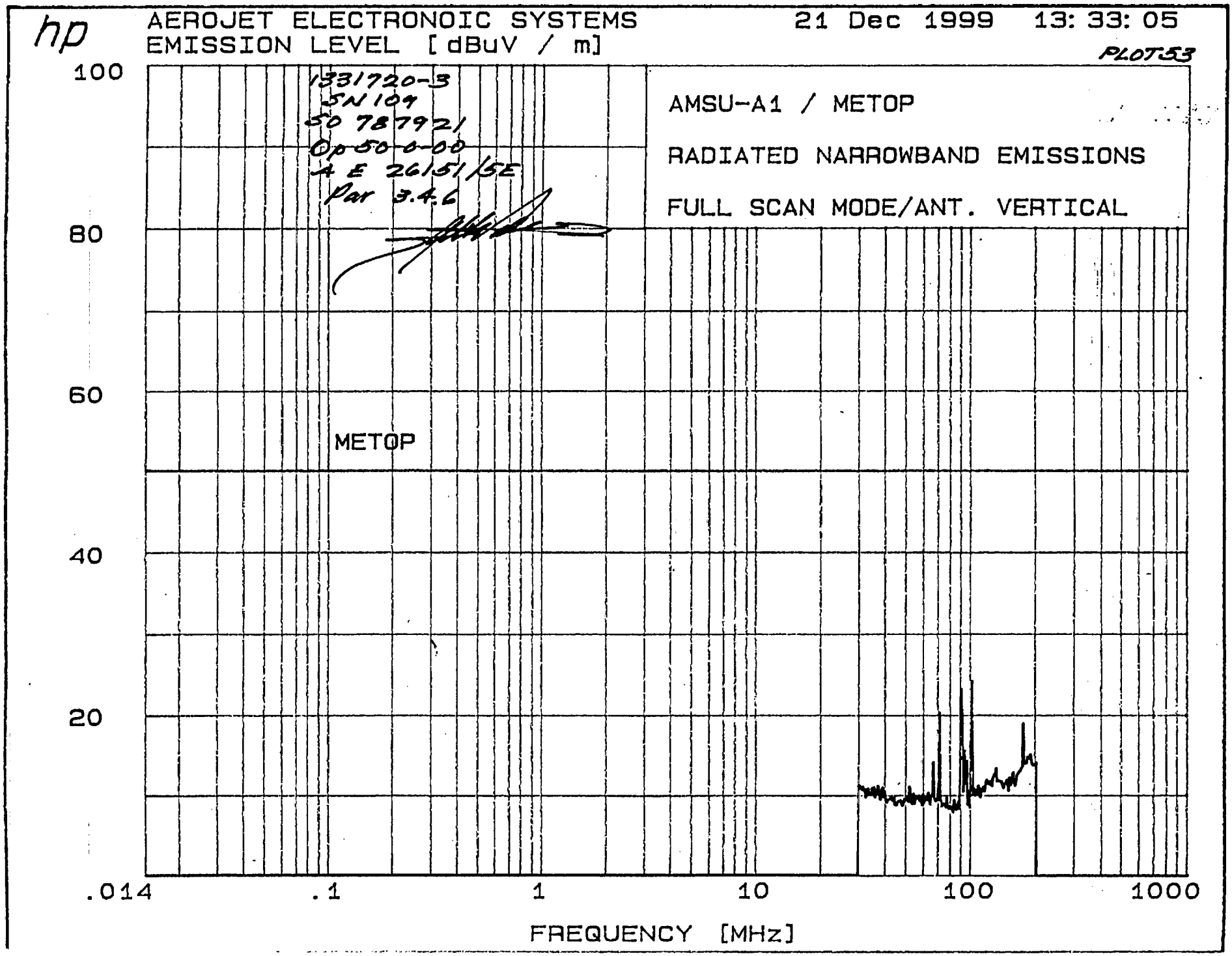

LOG CONICAL
REEOZ
MKR 624.925 368 MHz
REF 0.0 dBm
ATTEN 10 dB Special Frequency
-92.80 dBm
17 Dec 99
AMSU-A1
1331720-5
SN 109
PLOT 48
50 787921
Op 50-0-00
AE 26151/6E
Par 3.4.6
10 dB/
MARKER
624.925 368 MHz
-92.80 dBm
DL
-60.0 dBm
-60 dBm
CENTER 624.925 00 MHz
SPAN 1.00 kHz
RES BW 3 kHz
VBW 10 kHz
SWP 33.3 msec

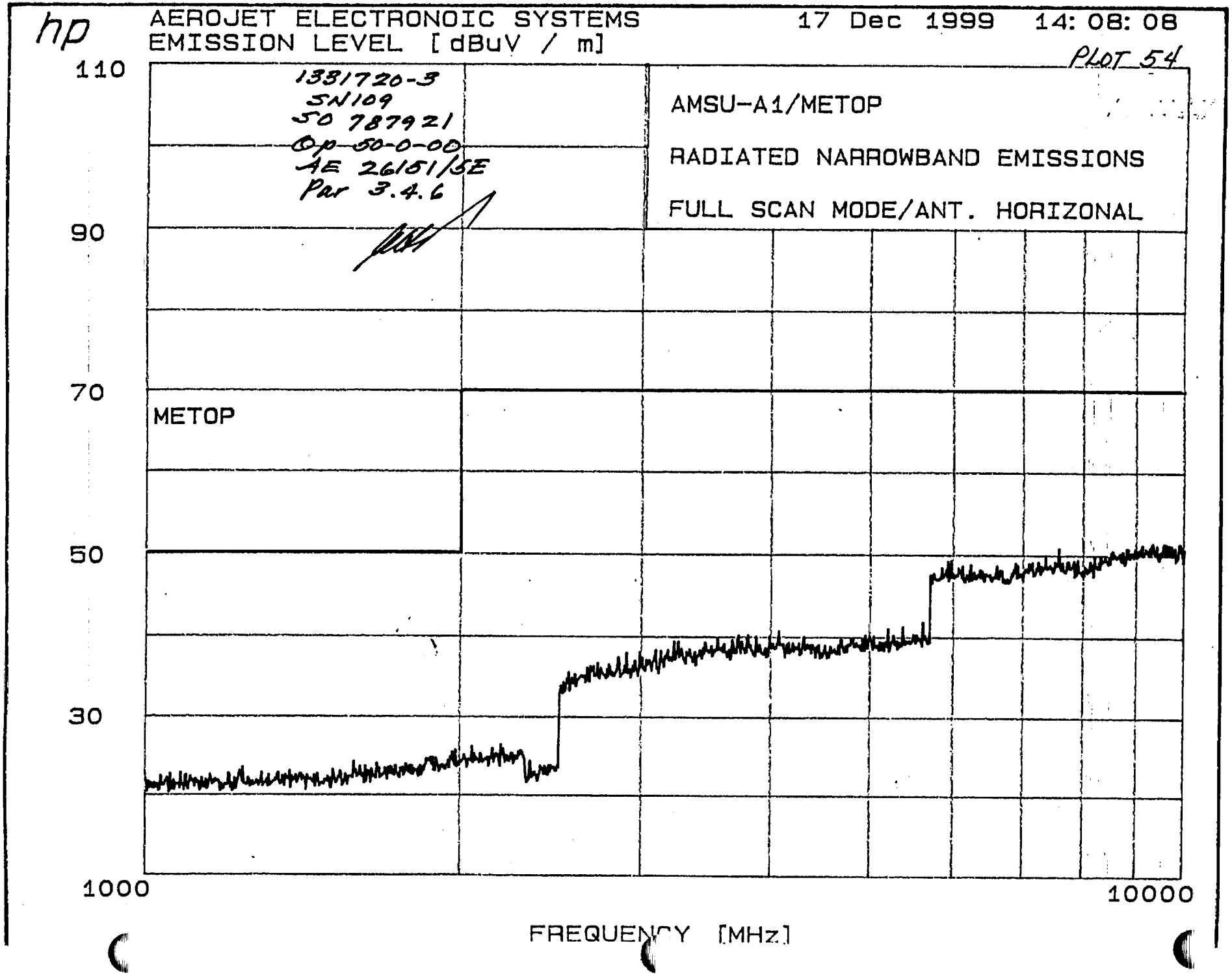

LOG CONICAL
REF 0.0 dBm
REQ2
ATTEN 10 dB Special Frequency
MKR 631.729 780 MHz
-93.10 dBm
hp
10 dB/
17 Dec 99
AMSU-A1
1331720-3
SN 109
PLOT 49
50 787921
Op 50-0-00
AE 26151/5E
Par 8.4.6
MARKER
631.729 780 MHz
-93.10 dBm
DL
-60.0
dBm
-60
dBm
CENTER 631.730 00 MHz
RES BW 3 kHz
VBW 10 kHz
SPAN 1.00 kHz
SWP 33.3 msec

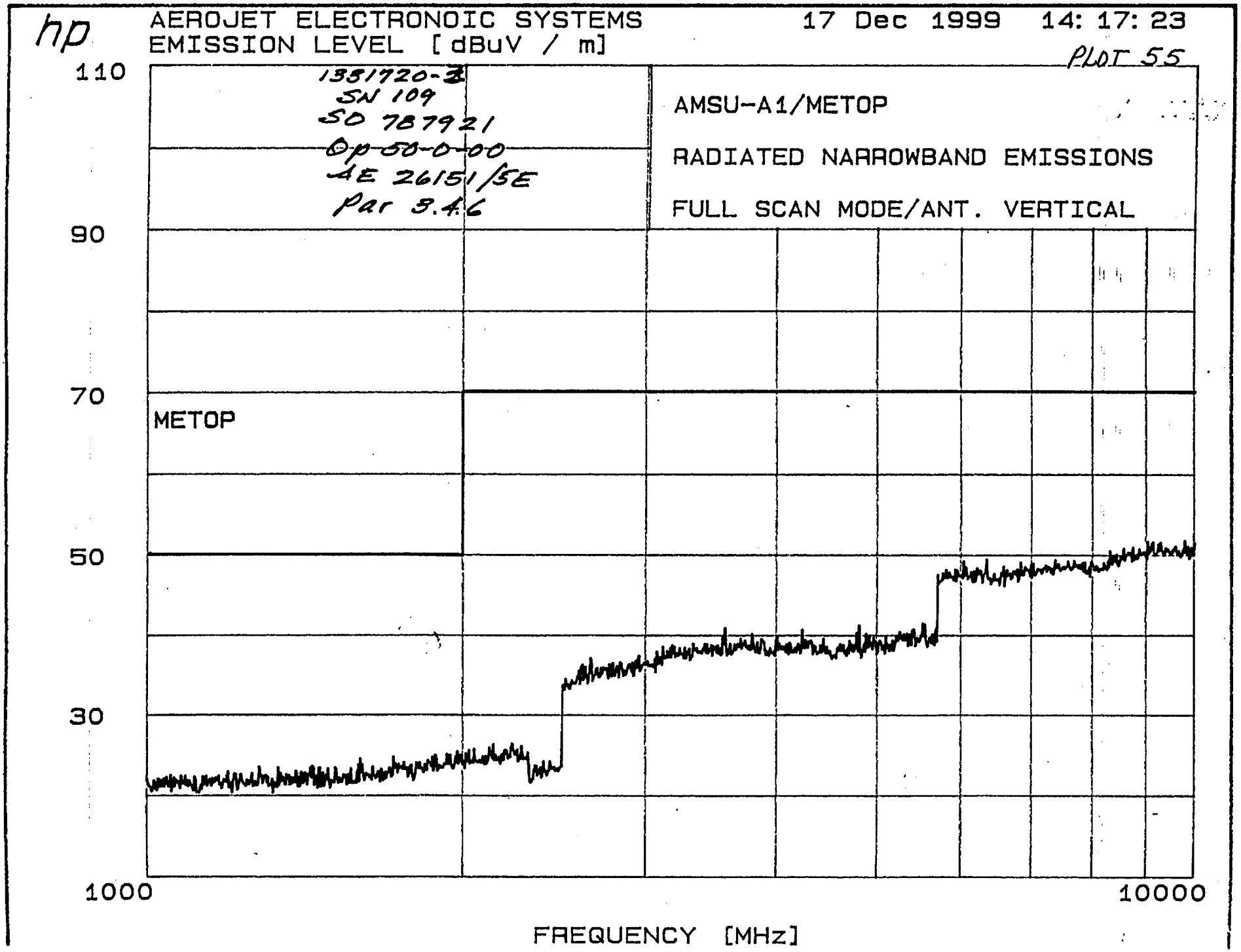

LOG CONICAL
REF 0.0 dBm
ATTEN 10 dB
RE02
Special Frequency
MKR 743.840 863 MHz
-92.90 dBm
hp
10 dB/
17 Dec 99
AMSU-A1
1331720-3
SN 109
PLOT 50
SO 787921
Op 50-0-00
AE 26151/5E
Par 3.4.6
MARKER
743.840 863 MHz
-92.90 dBm
DL
-60.0
dBm
-60
dBm
CENTER 743.841 00 MHz
RES BW 3 kHz
VBW 10 kHz
SPAN 1.00 kHz
SWP 33.3 msec

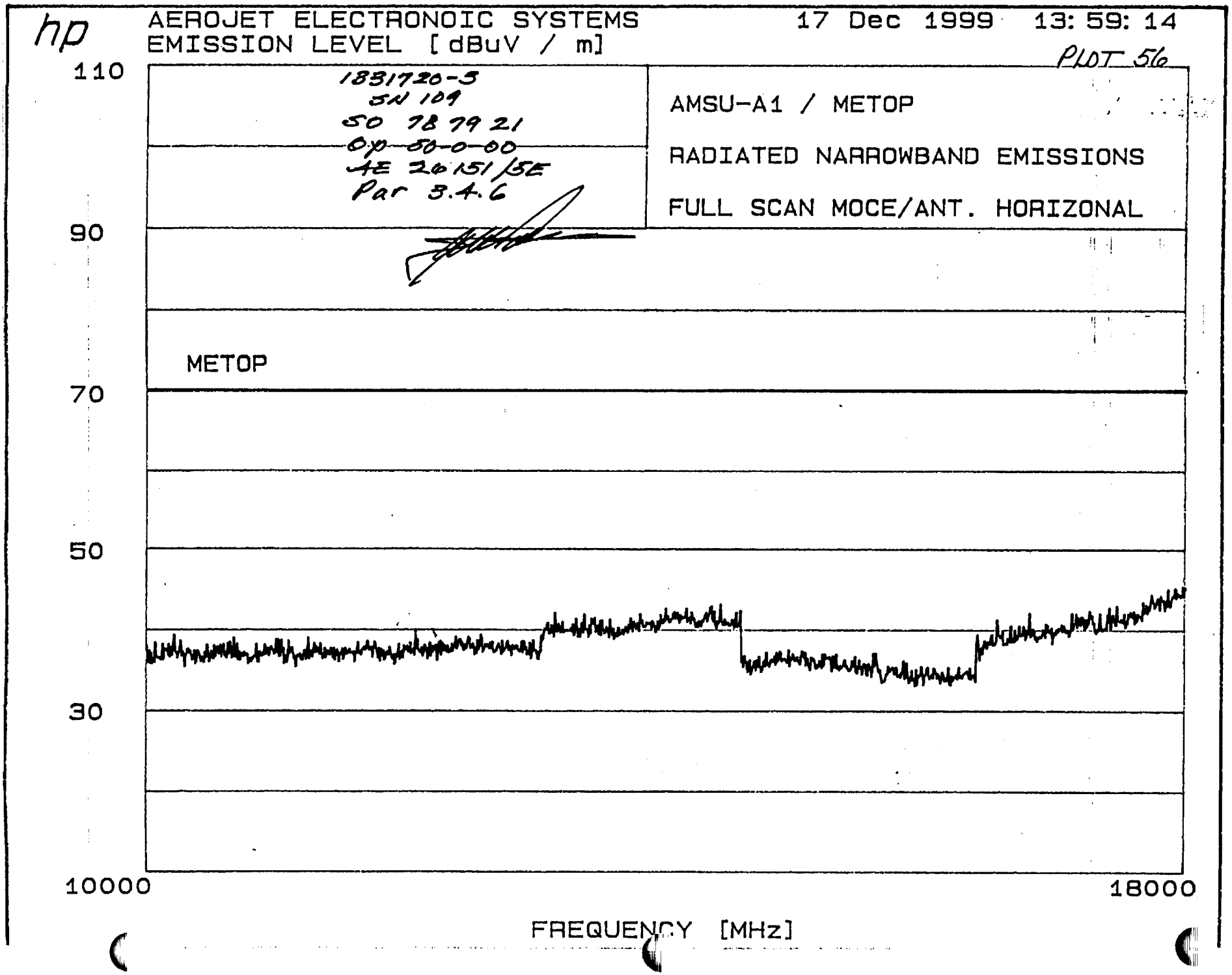

LOG CONICAL
REF 0.0 dBm
ATTEN 10 dB
REO2
Special Frequency
MKR 751.943 878 MHz
-93.50 dBm
hp
10 dB/
17 Dec 99
AN150-A1
1331720-3
SN 109
PLOT 51
SO 787921
Op 50-0-00
AE 26151/6E
Par 3.4.6
MARKER
751.943 878 MHz
-93.50 dBm
DL
-60.0 dBm
-60 dBm
CENTER 751.944 00 MHz
RES BW 3 kHz
VBW 10 kHz
SPAN 1.00 kHz
SWP 33.3 msec

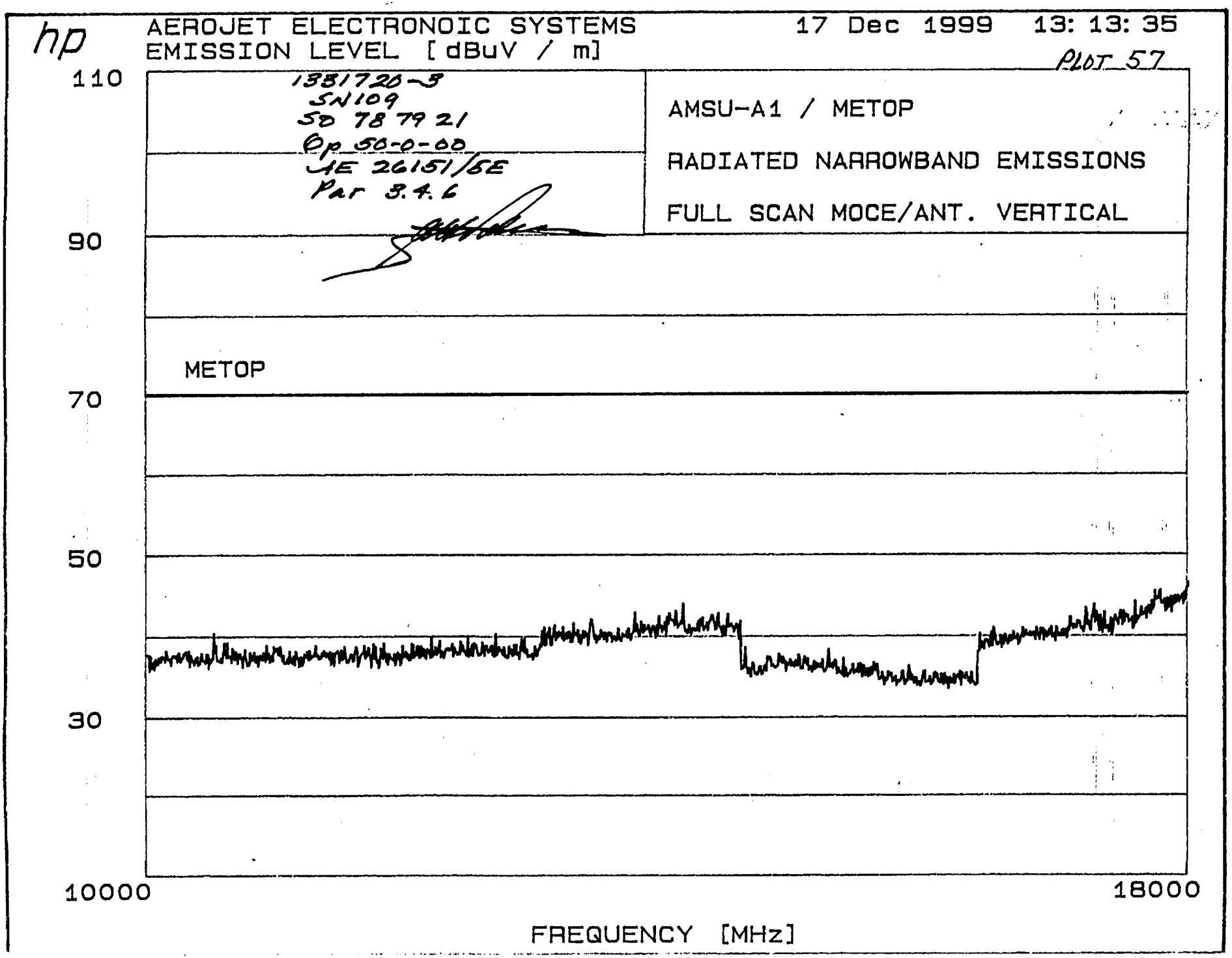

hp
AEROJET ELECTRONOIC SYSTEMS
21 Dec 1999 13: 24: 06
EMISSION LEVEL [dBuV / m]
PLOT 52
1331720-2
SN 109
SO 787921
Op 00-0-00
AE 26101/GE
Par 3.4.6
AMSU-A1 / METOP
RADIATED NARROWBAND EMISSIONS
FULL SCAN MODE/ANT. HORIZONTAL
METOP
100
80
60
40
20
.014
.1
1
10
100
1000
FREQUENCY [MHz]

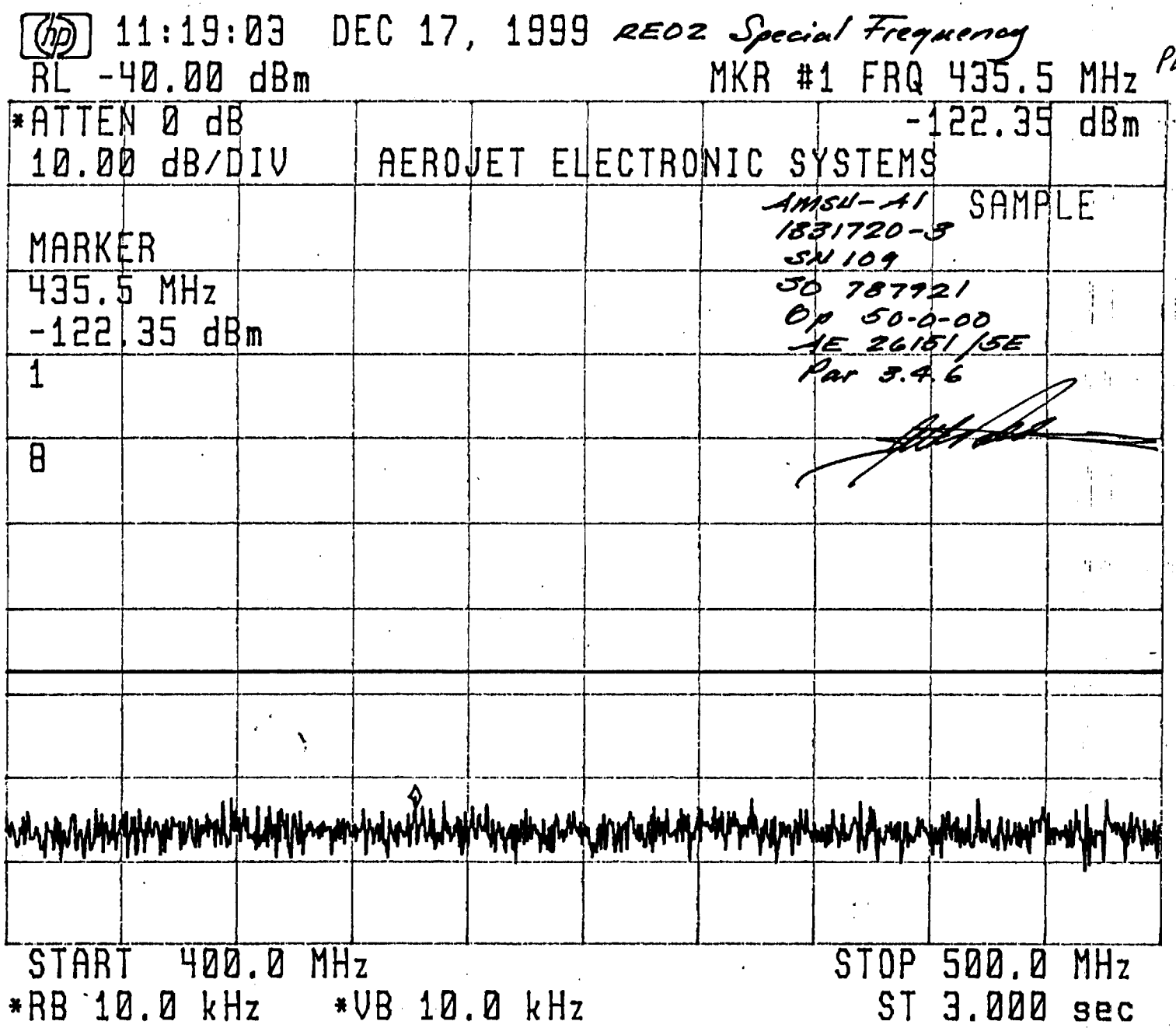

hp
AEROJET ELECTRONOIC SYSTEMS
21 Dec 1999 13: 33: 05
EMISSION LEVEL [dBuV / m]
PLOT53
1331720-3
SN104
50 787921
Op 50-0-00
4 E 26151/5E
Par 3.4.6
AMSU-A1 / METOP
RADIATED NARROWBAND EMISSIONS
FULL SCAN MODE/ANT. VERTICAL
METOP
100
80
60
40
20
.014
.1
1
10
100
1000
FREQUENCY [MHz]


hp
AEROJET ELECTRONOIC SYSTEMS
EMISSION LEVEL [dBuV / m]
17 Dec 1999 14:08:08
PLOT 54
1331720-3
SN109
SO 787921
Op-50-0-00
AE 26151/SE
Par 3.4.6
AMSU-A1/METOP
RADIATED NARROWBAND EMISSIONS
FULL SCAN MODE/ANT. HORIZONAL
METOP
110
90
70
50
30
1000
10000
FREQUENCY [MHz]


hp
AEROJET ELECTRONOIC SYSTEMS
EMISSION LEVEL [dBuV / m]
17 Dec 1999 14: 17: 23
PLOT 55
1351720-3
SN 109
SO 787921
Op 50-0-00
AE 26151/5E
Par 3.4.6
AMSU-A1/METOP
RADIATED NARROWBAND EMISSIONS
FULL SCAN MODE/ANT. VERTICAL
METOP
110
90
70
50
30
1000
10000
FREQUENCY [MHz]


hp
AEROJET ELECTRONOIC SYSTEMS
EMISSION LEVEL [dBuV / m]
17 Dec 1999 13: 59: 14
PLOT 56
1831720-3
SN 109
SO 78 79 21
Op 50-0-00
AE 26151/5E
Par 3.4.6
AMSU-A1 / METOP
RADIATED NARROWBAND EMISSIONS
FULL SCAN MOCE/ANT. HORIZONAL
METOP
110
90
70
50
30
10000
18000
FREQUENCY [MHz]

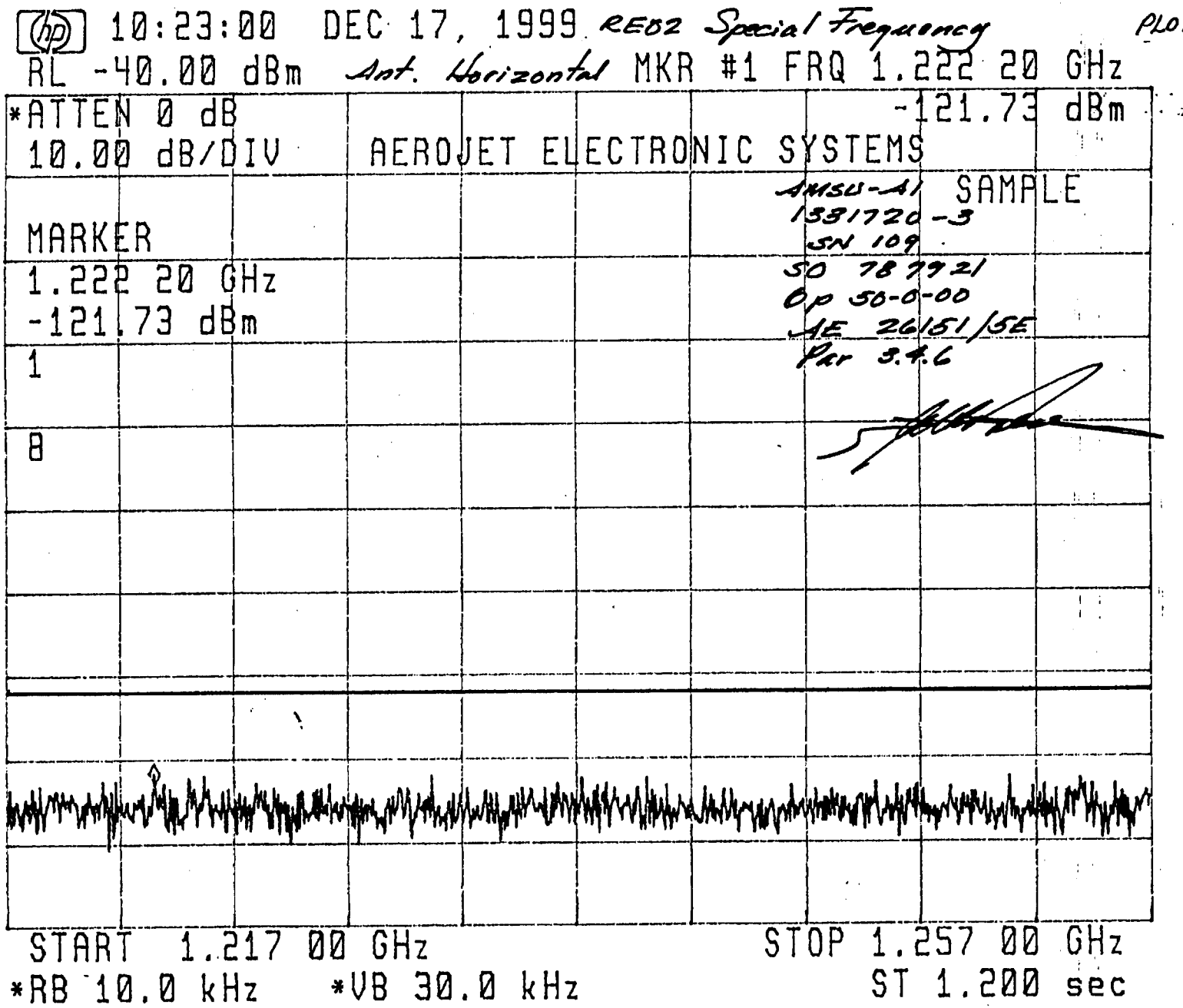

hp
AEROJET ELECTRONOIC SYSTEMS
EMISSION LEVEL [dBuV / m]
17 Dec 1999 13:13:35
PLOT 57
1351720-3
SN109
SO 78 79 21
Op 50-0-00
AE 26151/6E
Par 3.4.6
AMSU-A1 / METOP
RADIATED NARROWBAND EMISSIONS
FULL SCAN MOCE/ANT. VERTICAL
METOP
110
90
70
50
30
10000
18000
FREQUENCY [MHz]



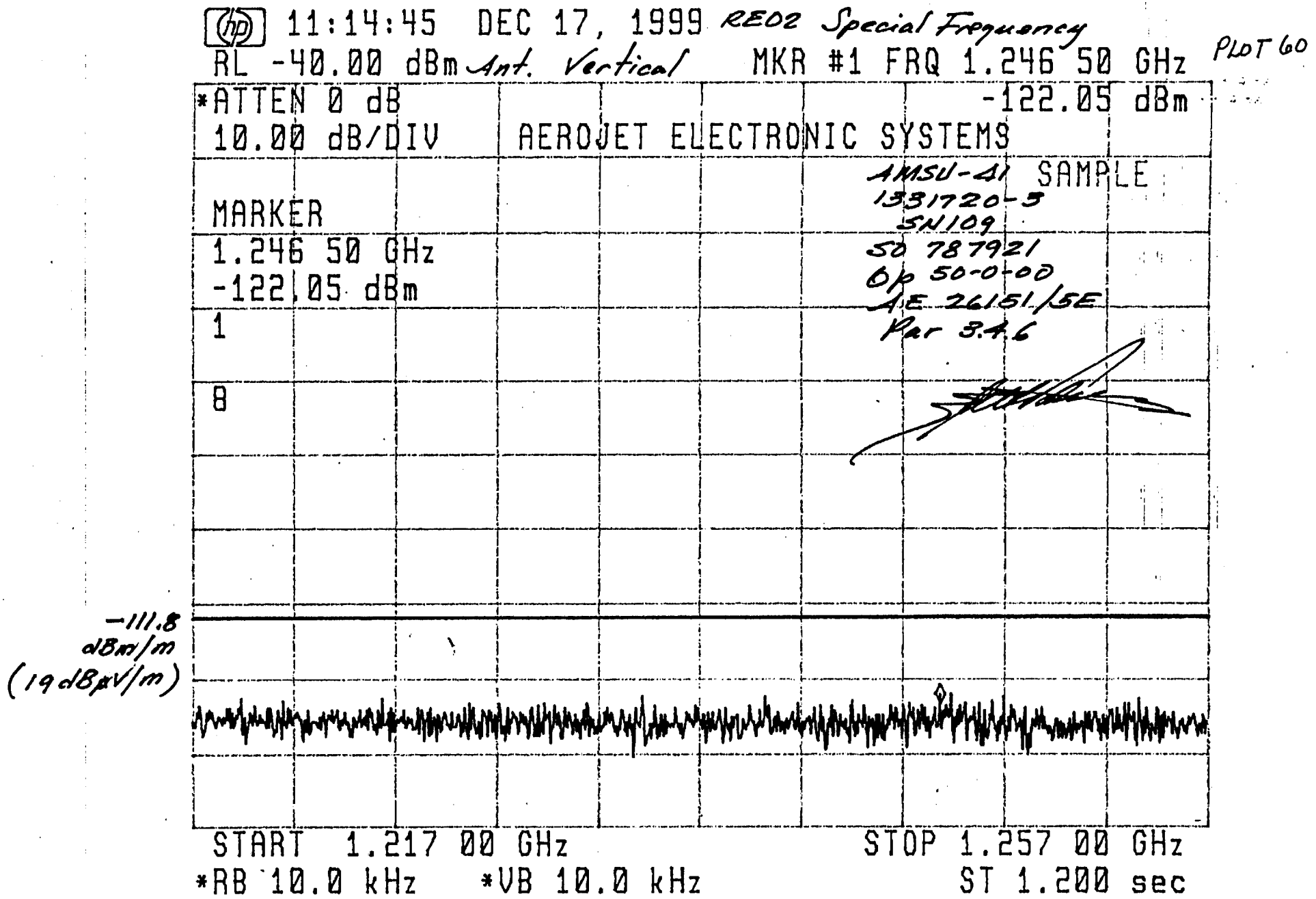
PLOT 58

-107.1 dBm/m (20dBμV/m)

PLOT 59



-111.8 dBm/m (19 dBμV/m)


11:14:45 DEC 17, 1999 RE02 Special Frequency
RL -40.00 dBm Ant. Vertical MKR #1 FRQ 1.246 50 GHz
PLOT 60
*ATTEN 0 dB
-122.05 dBm
10.00 dB/DIV
AEROJET ELECTRONIC SYSTEMS
AMSU-A1 SAMPLE
1331720-3
SN109
50 787921
Op 50-0-00
AE 26151/5E
Par 3.4.6
MARKER
1.246 50 GHz
-122.05 dBm
1
8
-111.8 dBm/m (19 dBµV/m)
START 1.217 00 GHz
STOP 1.257 00 GHz
*RB 10.0 kHz
*VB 10.0 kHz
ST 1.200 sec

10:35:39 DEC 17 1999 RE02 Special Frequency PLOT 61

RL -40.00 dBm Ant. ~~Vertical~~ Horizontal MKR #1 FRQ 1.597 95 GHz

*ATTEN 0 dB -121.50 dBm

10.00 dB/DIV AEROJET ELECTRONIC SYSTEMS

AN/SV-A1 SAMPLE
1331720-3
SN 109

MARKER
1.597 95 GHz
-121.50 dBm

SO 787921
Op 50-0-00
TE 26151/5E
Par 3.4.6

1

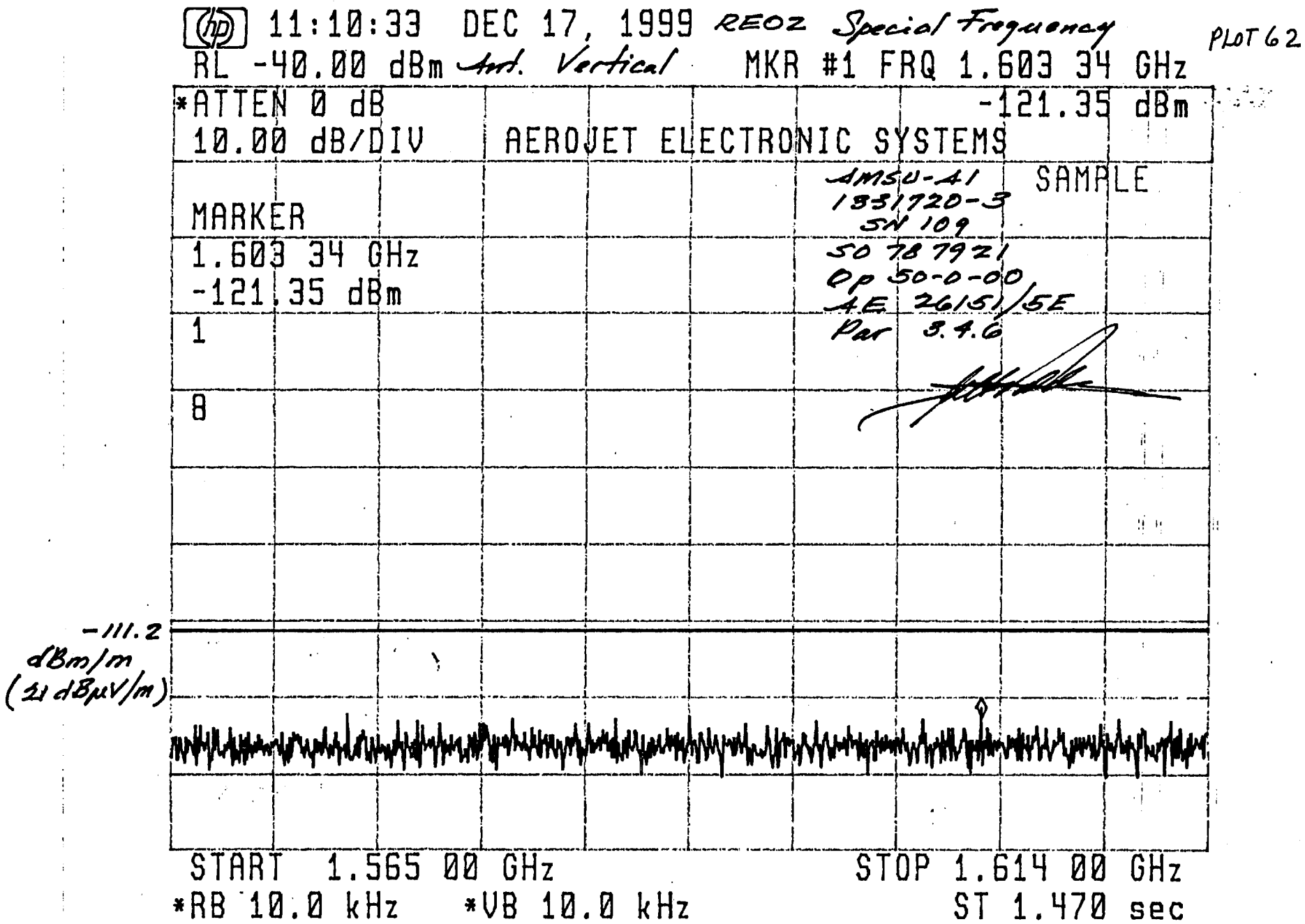
B

-111.2 dBm/m (21 dBμV/m)

START 1.565 00 GHz STOP 1.614 00 GHz

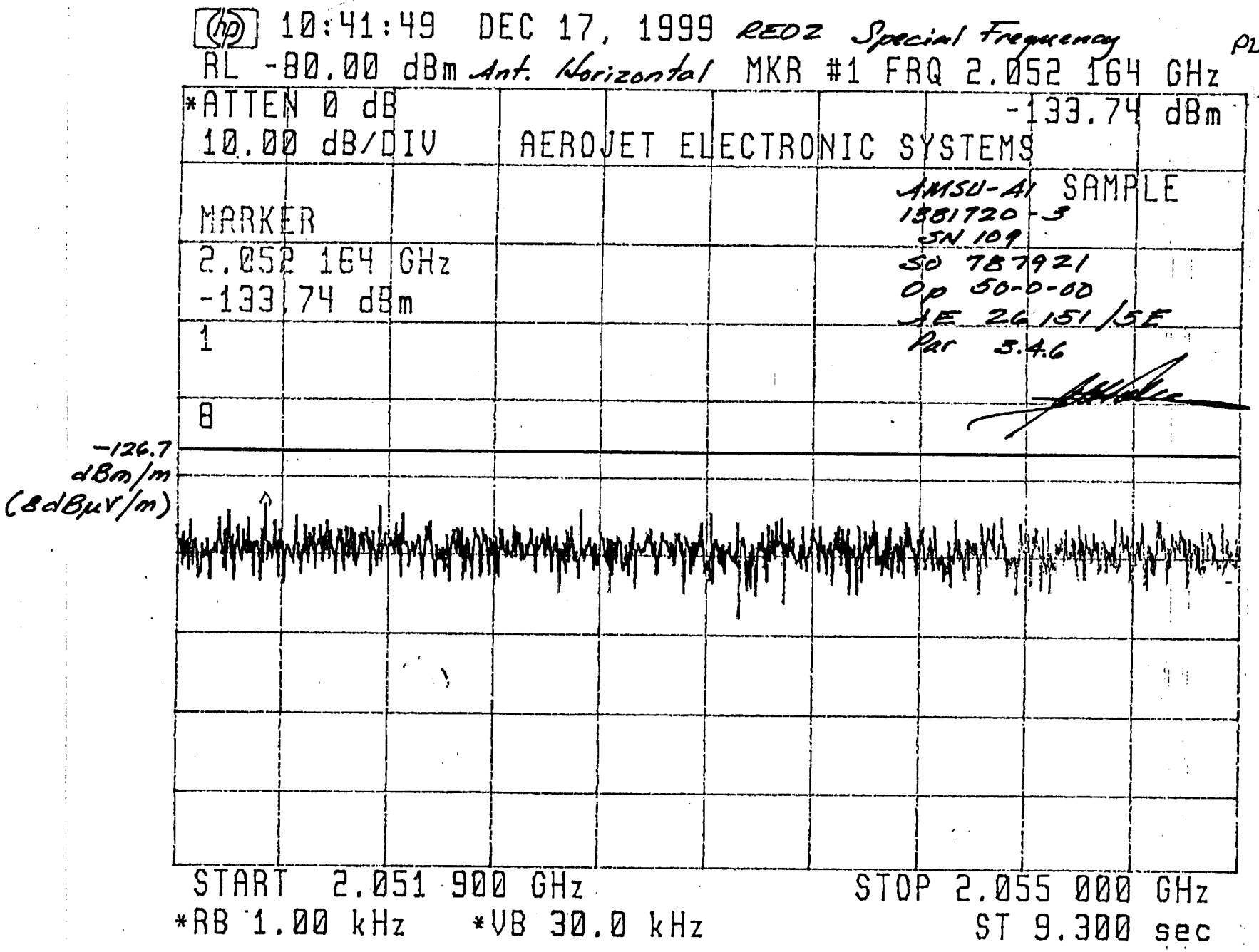
*RB 10.0 kHz *VB 30.0 kHz ST 1.470 sec

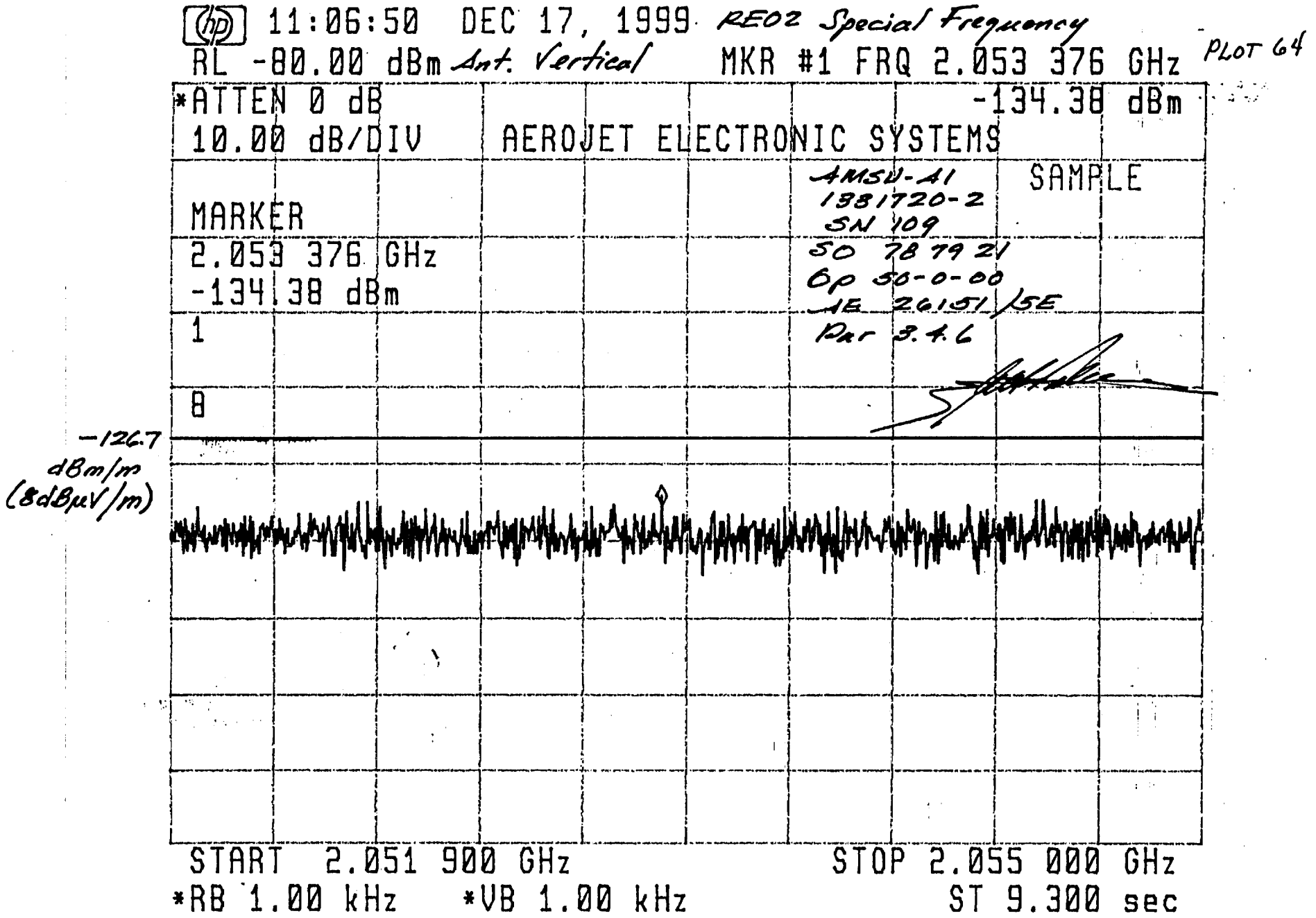
PLOT 62

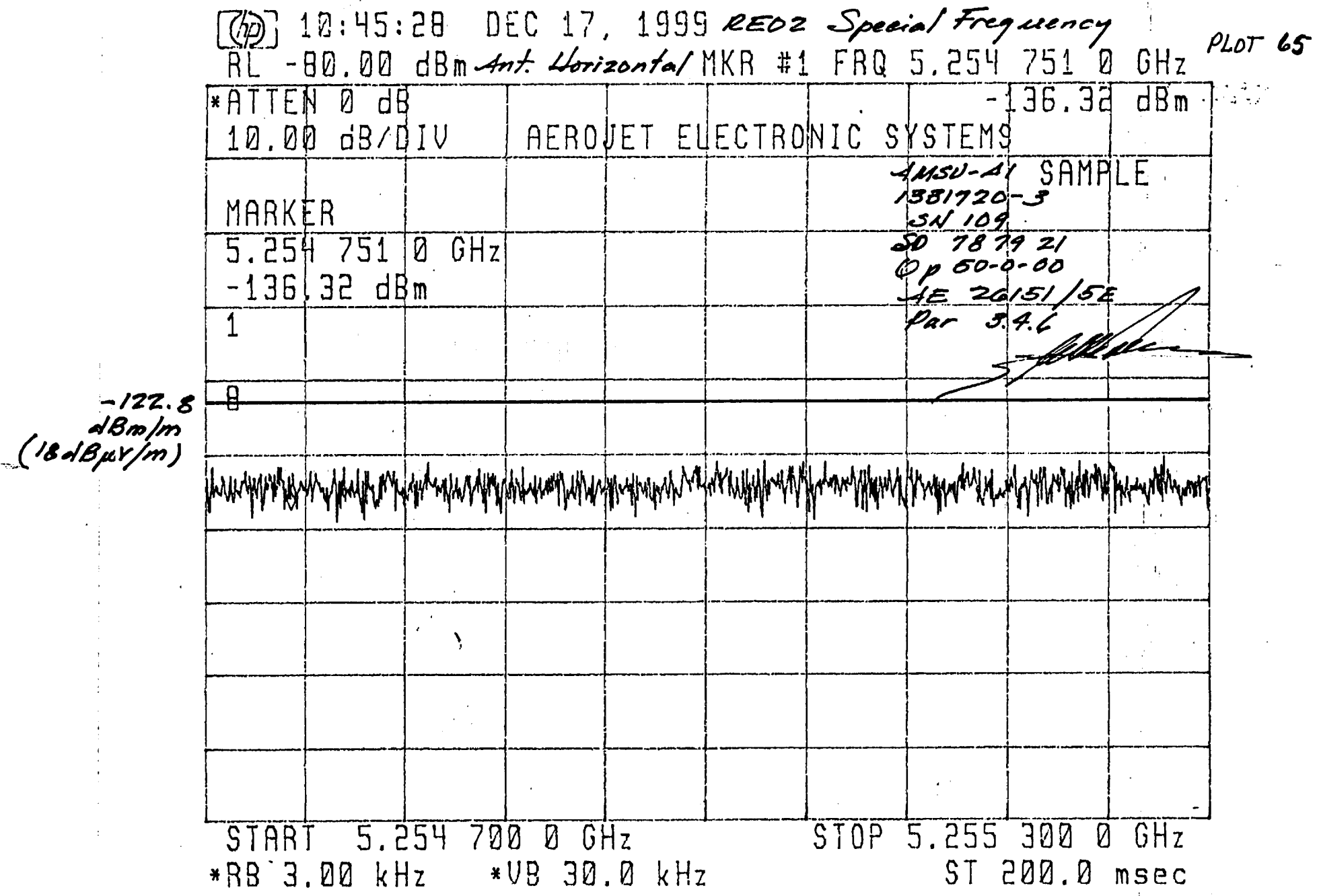


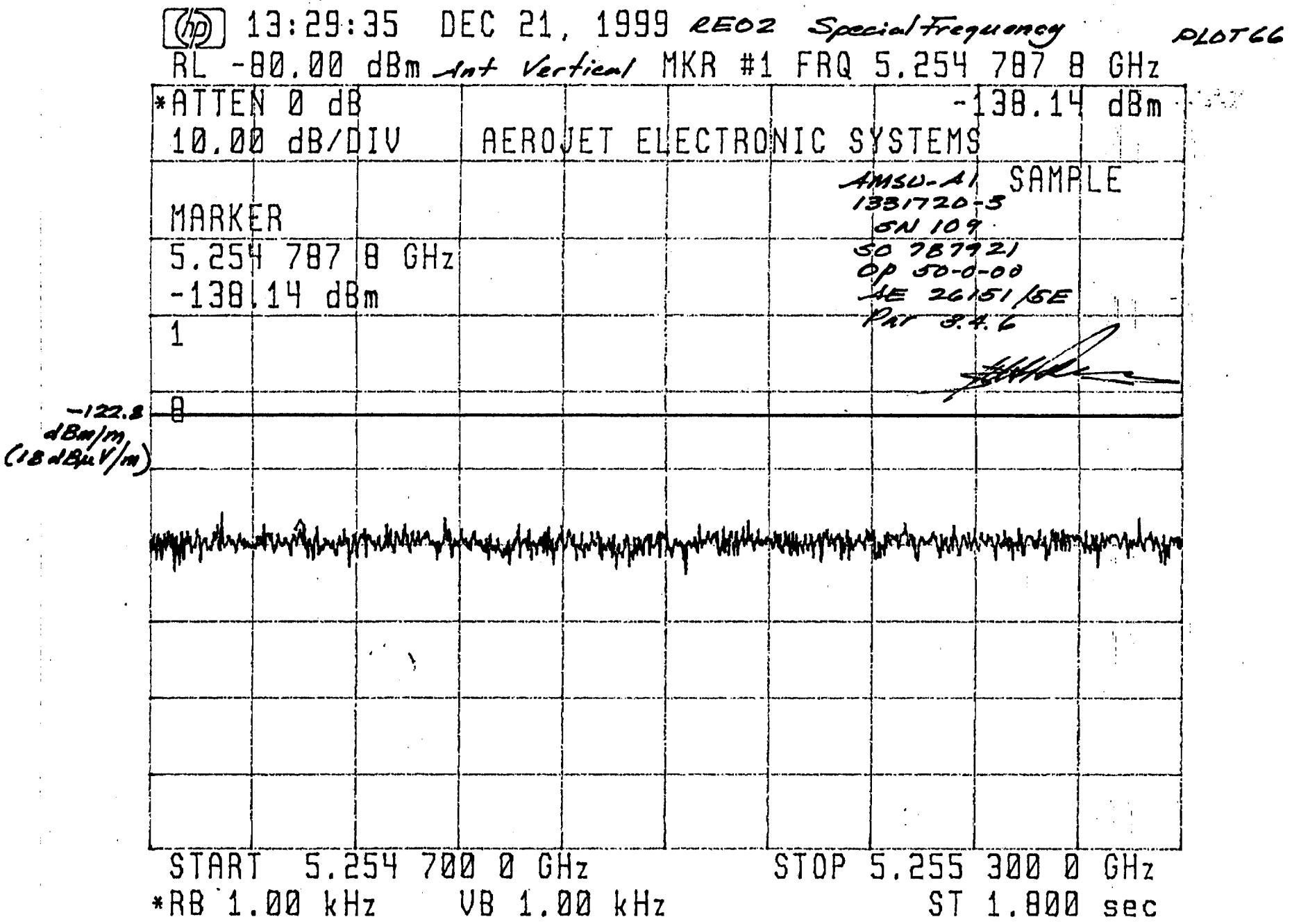
-111.2 dBm/m (21 dBμV/m)

PLOT 63


10:41:49 DEC 17, 1999 REO2 Special Frequency
RL -80.00 dBm Ant: Horizontal MKR #1 FRQ 2.052 164 GHz
*ATTEN 0 dB
-133.74 dBm
10.00 dB/DIV
AEROJET ELECTRONIC SYSTEMS
AMSU-A1 SAMPLE
1331720-3
SN 109
50 787921
Op 50-0-00
AE 26151/5E
Par 5.4.6
MARKER
2.052 164 GHz
-133.74 dBm
1
8
-126.7 dBm/m (8dBμV/m)
START 2.051 900 GHz
STOP 2.055 000 GHz
*RB 1.00 kHz
*VB 30.0 kHz
ST 9.300 sec

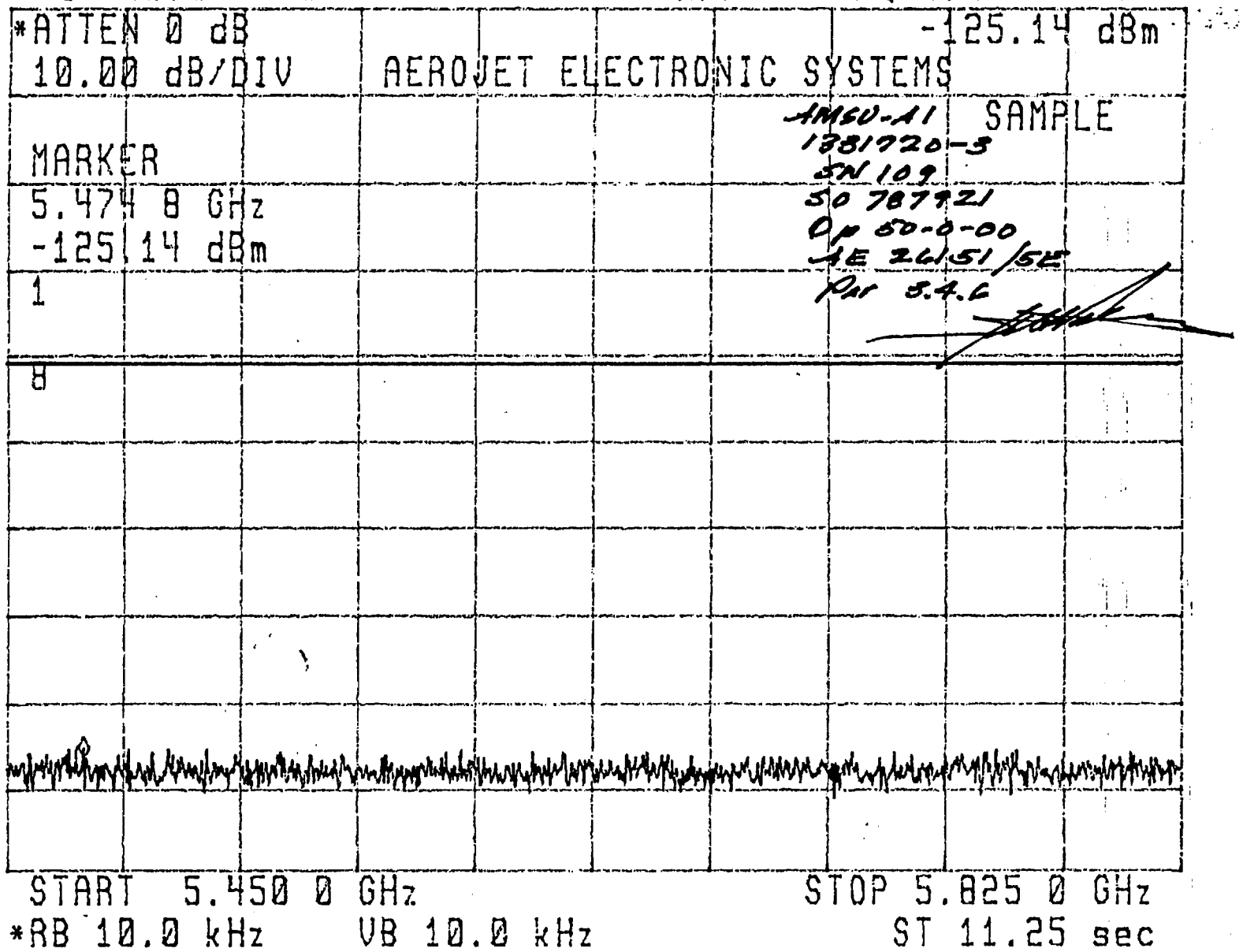

11:06:50 DEC 17, 1999 RE02 Special Frequency
RL -80.00 dBm Ant. Vertical
MKR #1 FRQ 2.053 376 GHz
PLOT 64
*ATTEN 0 dB
-134.38 dBm
10.00 dB/DIV
AEROJET ELECTRONIC SYSTEMS
4M5V-A1
1381720-2
SN 109
SAMPLE
MARKER
2.053 376 GHz
-134.38 dBm
50 78 79 21
6p 50-0-00
1E 26151 15E
Par 3.4.6
1
8
-126.7 dBm/m (8dBμV/m)
START 2.051 900 GHz
STOP 2.055 000 GHz
*RB 1.00 kHz
*VB 1.00 kHz
ST 9.300 sec


10:45:28 DEC 17, 1999 REO2 Special Frequency
PLOT 65
RL -80.00 dBm Ant. Horizontal MKR #1 FRQ 5.254 751 0 GHz
*ATTEN 0 dB
10.00 dB/DIV
-136.32 dBm
AEROJET ELECTRONIC SYSTEMS
AMSU-A1 SAMPLE
1381720-3
SN 109
SO 78 79 21
Op 60-0-00
AE 26151/5E
Par 3.4.6
MARKER
5.254 751 0 GHz
-136.32 dBm
1
-122.8 dBm/m (18 dBμV/m)
START 5.254 700 0 GHz
STOP 5.255 300 0 GHz
*RB 3.00 kHz
*VB 30.0 kHz
ST 200.0 msec


13:29:35 DEC 21, 1999 RE02 Special Frequency
PLOT66
RL -80.00 dBm Ant Vertical MKR #1 FRQ 5.254 787 8 GHz
*ATTEN 0 dB
-138.14 dBm
10.00 dB/DIV
AEROJET ELECTRONIC SYSTEMS
AMSU-A1 SAMPLE
1331720-3
SN 109
SO 787921
OP 50-0-00
HE 26151/6E
Par 3.4.6
MARKER
5.254 787 8 GHz
-138.14 dBm
1
-122.8 dBm/m (18 dBµV/m)
START 5.254 700 0 GHz
STOP 5.255 300 0 GHz
*RB 1.00 kHz
VB 1.00 kHz
ST 1.800 sec

13:36:08 DEC 21, 1999 REO2 Special Frequency PLOT 67

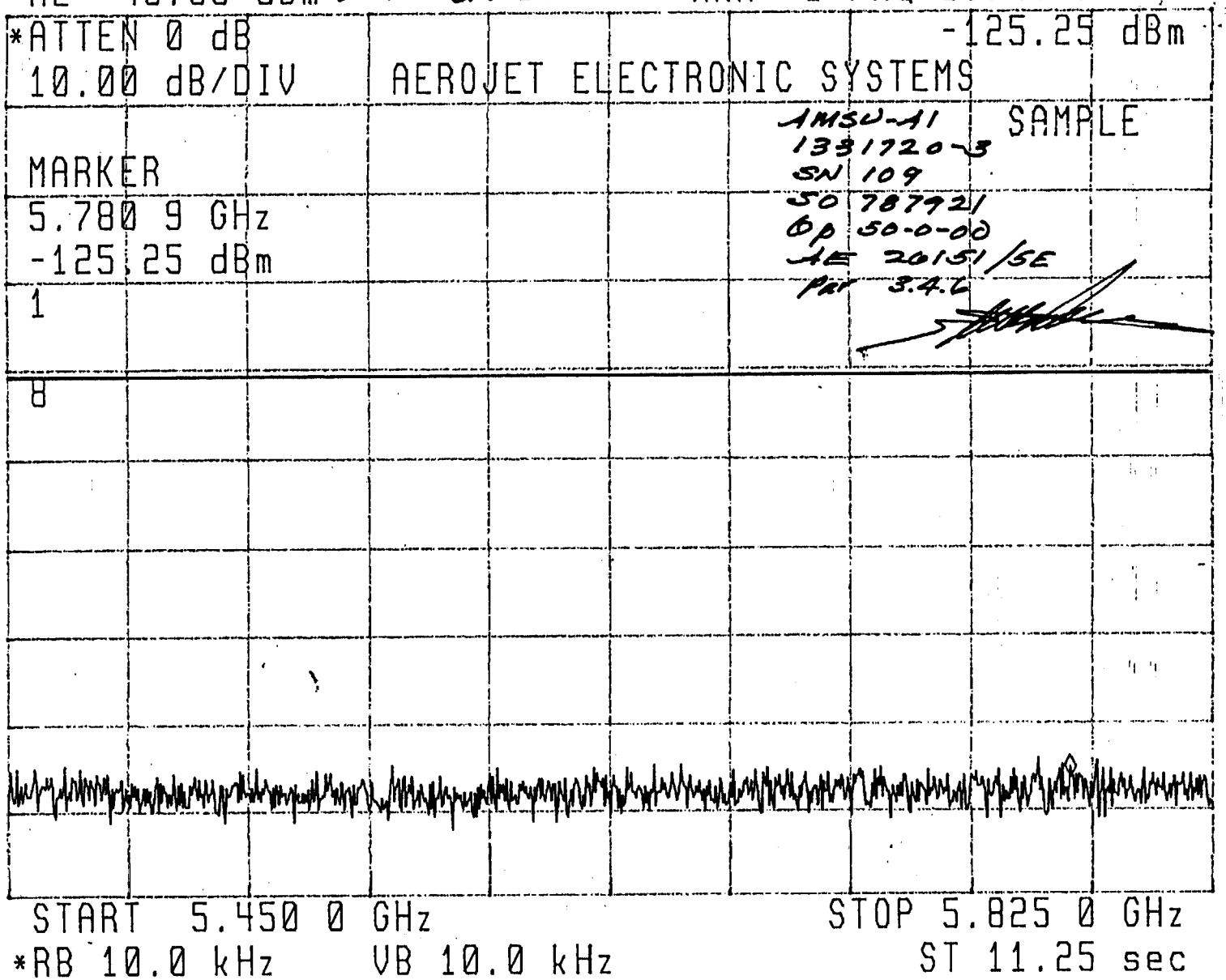
RL -40.00 dBm Ant. Horizontal MKR #1 FRQ 5.474 8 GHz



-80.7 dBm/m (41 dBuV/m)

14:35:19 DEC 21, 1999 RE02 Special Frequency PLOT 68

RL -40.00 dBm Ant Vertical MKR #1 FRQ 5.780 9 GHz



-80.7 dBm/m (61 dBµV/m)

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Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
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March 2000

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A. Valdez

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11665

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Azusa, CA 91702

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16. ABSTRACT (*Maximum 200 words*)

This is the Engineering Test Report, Radiated Emissions and SARR, SARP, DCS Receivers, Link Frequencies EMI Sensitive Band Test Results, AMSU-A1, S/N 109, for the Integrated Advanced Microwave Sounding Unit-A (AMSU-A).

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Unclassified	Unclassified		---

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4. TITLE AND SUBTITLE
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5. FUNDING NUMBERS
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6. AUTHOR(S)
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1100 W. Hollyvale
Azusa, CA 91702

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Greenbelt, Maryland 20771

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11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT

12b. DISTRIBUTION CODE
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13. ABSTRACT (*Maximum 200 words*)

This is the Engineering Test Report, Radiated Emissions and SARR, SARP, DCS Receivers, Link Frequencies EMI Sensitive Band Test Results, AMSU-A1, S/N 109, for the Integrated Advanced Microwave Sounding Unit-A (AMSU-A).

14. SUBJECT TERMS
EOS
Microwave System

15. NUMBER OF PAGES

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17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
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A. Valdez	207	N/A	

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Systems Engineer (R. Platt)	8410	3/17/00
Design Assurance (E. Lorenz)	8410	3/17/00
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